Introduction

U.S. Patent Nos. 6,628,629, 7,359,971, 7,412,517 & RE46,206

The “optimize” terms

The ’971 Patent: Claim 12; ’206 Patent, Claims 1, 19, and 121

The Parties' Proposed Constructions

"to optimize end-user quality of service (QoS) [for an Internet Protocol (IP) flow / associated with said IP flow]" ('971 Patent, Claim 12; '206 Patent, Claims 1, 121)

"to optimize end-user internet protocol (IP) quality of service (QoS)" ('206 Patent, Claim 19)

Defendants' Construction	IV's Construction
Indefinite. Issue preclusion applies.	"[so as] to differentiate between types of traffic or service types and allocate a different level of system resources to an Internet Protocol (IP) flow"

Dispute(s):

- Whether IV is issue precluded with respect to the "optimize end user QoS" terms in this case based on the District of Delaware's final judgment finding "optimize" as used in the '248 Jorgensen Patent to be indefinite

- Whether the term "optimize end user QoS" renders the term indefinite

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- Affects claim construction: If Court finds issue preclusion, claim construction disputes the terms below are moot:

Term			Patent / Claim(s)
The "optimize" terms	1	"to optimize end user quality of service (QoS) for an Internet Protocol (IP) flow"	'971 Patent Claim 12
	2	"so as to optimize end-user quality of service (QoS) associated with said IP flow"	'206 Patent, Claim 1
	3	"so as to optimize end-user internet protocol (IP) quality of service (QoS)"	'206 Patent, Claim 19
	4	"to optimize end-user quality of service (QoS) for an Internet Protocol (IP)flow"	'206 Patent, Claim 121
Additional Disputed Terms in Claim 12 of the '971 Patent and Dependents	5	"host workstation"	'971 Patent, Claim 12
	6	"assigning means for assigning future slots of a transmission frame to a portion of said IP flow in said transmission frame to a portion of said IP flow in said transmission frame for transmission over said share wireless network"	'971 Patent, Claim 12
	7	"means for applying an advanced reservation algorithm"	'971 Patent, Claim 12
	8	"means for reserving a first slot for a first data packet of an Internet Protocol (IP) flow in a future transmission frame based on said algorithm"	'971 Patent, Claim 12
	9	"means for reserving a second slot for a second data packet of said IP flow in a transmission frame subsequent in time to said future transmission frame based on said algorithm"	'971 Patent, Claim 12
	10	"means for taking into account service level agreement (SLA) based priorities for said IP flow"	'971 Patent, Claim 18

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

Identical issue	
Fully and vigorously litigated	✔
Necessary to support the judgment	✔
No special circumstances (Federal Circuit Affirmed)	✔

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- Judge Stark ruled that "optimize," as used in the '248 Patent, is indefinite

In explaining what it means to "optimize" end user QoS, the specification indicates that QoS is subjective and that QoS can vary from user to user based on individual preferences. (*See* '248 patent at 13:20-27 (explaining that system seeks to "provide[] user[s] with optimal service, in whatever manner the user defines it"); *see also id.* at 12:62-65 (explaining that QoS is continuum that is "defined by what network performance characteristic is most important to a particular user")) This subjective, user-based understanding would make it difficult, if not impossible for a POSA to ascertain, with reasonable certainty, whether the claim limitation is satisfied by any particular embodiment. As Defendants' expert opined, the specification "provides no objective boundaries" and leaves the standard for measuring optimization "completely unbounded." (D.I. 210-6 Ex. A5 ¶¶ 78-81)

In response to these arguments, Plaintiffs identify portions of the specification that "provide[] specific examples of which QoS criteria are the 'best measure' of end-user QoS for particular applications." (JCCB at 144 (citing '248 patent at 2:54-62, 14:43-50)) The cited portions of the specification, however, do not provide adequate guidance as to the meaning of "optimize," nor do they rectify the indefiniteness of the portions of the specification indicating that QoS is subjective and varies by user. Based on the intrinsic and extrinsic evidence, the Court is persuaded, by clear and convincing evidence, that the term "optimize," as it is used in the '248 patent is indefinite.[9]

STARK, U.S. District Judge:

Dkt. 20 Ex. 7, Intellectual Ventures I v. T-Mobile USA, Inc., 1:13-cv-1671, Dkt. 370, at *21 (D. Del. Aug. 12, 2016) (Claim Construction Mem. Op.) (Stark, J.)

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- The Federal Circuit has affirmed that "optimiz[ing] . . . QoS" is indefinite

United States Court of Appeals
for the Federal Circuit

INTELLECTUAL VENTURES I LLC,
Plaintiff-Appellant

v.

T-MOBILE USA, INC., T-MOBILE US, INC., ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON, UNITED STATES CELLULAR CORPORATION,
Defendants-Appellees

We conclude that the "QoS requirements" are entirely subjective and user-defined. The '248 patent analogizes QoS to "a continuum, defined by what network performance characteristic is most important to a particular user" and characterizes it as "a relative term, finding different meanings for different users." '248 patent at 12:51–52, 62–65. "Ultimately," the '248 patent states, "the end-user experience is the final arbiter of QoS." *Id.* at 14:39–40.

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- The Federal Circuit has affirmed that "optimiz[ing] . . . QoS" is indefinite

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INTELLECTUAL VENTURES I LLC,
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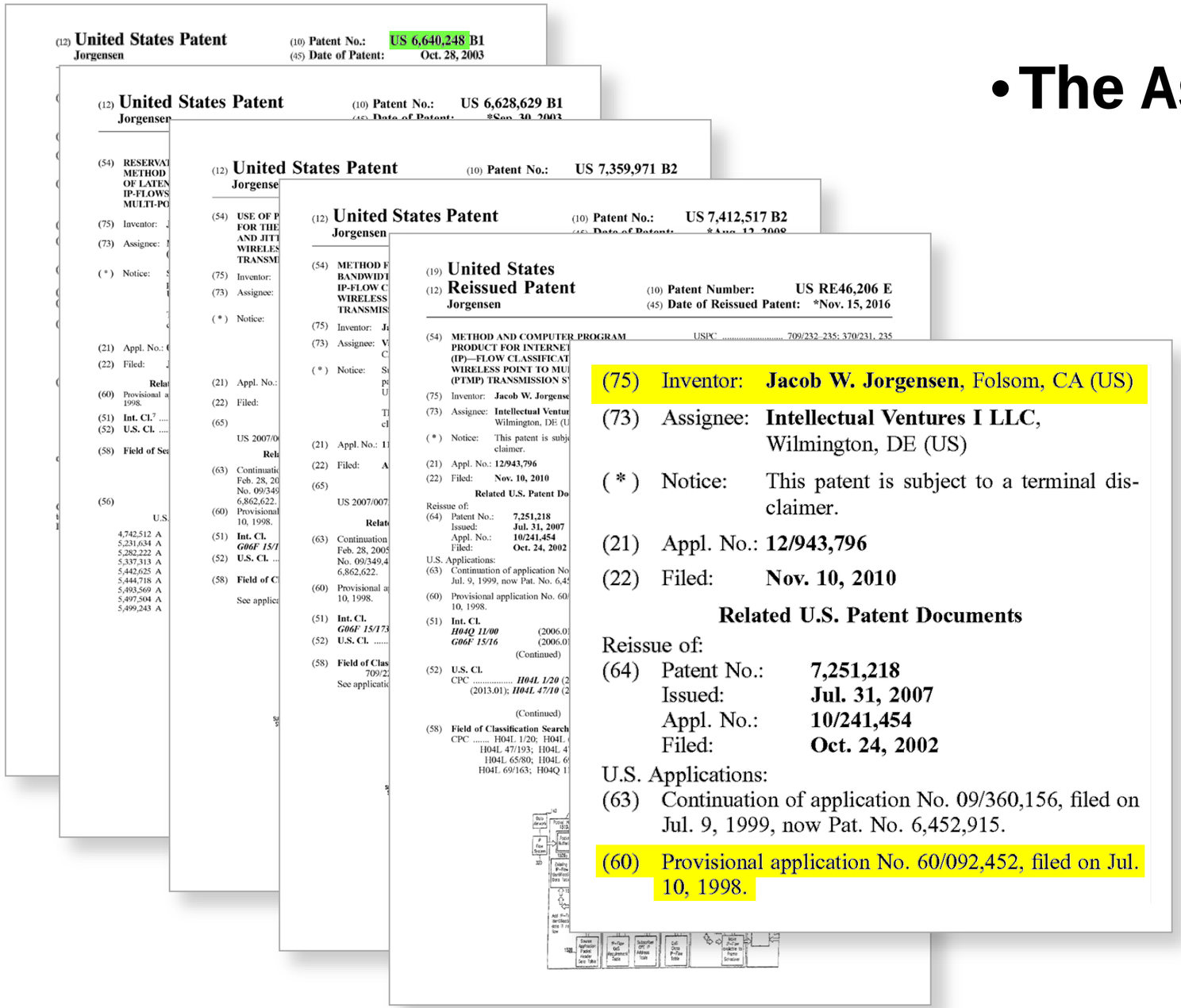
T-MOBILE USA, INC., T-MOBILE US, INC., ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON, UNITED STATES CELLULAR CORPORATION,
Defendants-Appellees

By the '248 patent's own terms, "optimiz[ing] . . . QoS" is a "term of degree" that, like the "aesthetically pleasing" limitation in *Datamize*, is "purely subjective" and depends "on the unpredictable vagaries of any one person's opinion." 417 F.3d at 1350–51. As in *Datamize*, merely understanding that "optimiz[ing] . . . QoS" relates to the end-user experience "fails to provide one of ordinary skill in the art with any way to determine whether" QoS has been "optimiz[ed]." We see no error in the district court's

Decision from Federal Circuit Court of Appeals in *IV v. T-Mobile et al*. (September 4, 2018), at 15

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms



- **The Asserted Jorgensen Patents**
  - Same inventor
  - Same priority claim
  - Same 41 pages of drawings
  - Same 80 columns of disclosure
  - Same claim term at issue

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- Claim 20 of the Adjudicated Jorgensen Patent claims "optimize" end user QoS.

20. An application-aware media access control (MAC) layer for optimizing end user application internet protocol (IP) quality of service (QoS) to IP flows comprising:

identifying means for identifying an application type of a software application associated with an IP flow; and

allocating means for allocating resources to said IP flow, responsive to said identifying means, so as to optimize end user application IP QoS requirements of said software application, wherein said resource allocating means allocates resources in a packet-centric manner that is not circuit-centric and does not use asynchronous transfer mode (ATM).

Dkt. 20 Ex. 5, the Adjudicated '248 Patent at Claim 20

The invalidated claim equates:
optimizing end user QoS to IP flows with
optimizing end user QoS of a software application

- IV's opposition hinges on an illusory distinction between these phrases

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- Both the invalidated claim and the asserted claims recite: Optimizing <u>end user</u> QoS

Claim 20 of the Adjudicated Jorgensen Patent

20. An application-aware media access control (MAC) layer for optimizing end user application internet protocol (IP) quality of service (QoS) to IP flows comprising:

identifying means for identifying an application type of a software application associated with an IP flow; and

allocating means for allocating resources to said IP flow, responsive to said identifying means, so as to optimize end user application IP QoS requirements of said software application, wherein said resource allocating means allocates resources in a packet-centric manner that is not circuit-centric and does not use asynchronous transfer mode (ATM).

Claim 12 of Asserted '971 Patent

12. A quality of service (QoS) aware, wireless communications system comprising:

• • •

a scheduler that allocates resources of said shared wireless network among said wireless network stations to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow, wherein said IP flow is associated with at least one of a latency-sensitive and a jitter-sensitive application;

- **No distinction between these phrases**
  - In the patents
  - In the prosecution history
  - In the inventor's testimony

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- Both the invalidated claim and the asserted claims recite: Optimizing end user QoS

Claim 20 of the Adjudicated Jorgensen Patent

20. An application-aware media access control (MAC) layer for optimizing end user application internet protocol (IP) quality of service (QoS) to IP flows comprising:

identifying means for identifying an application type of a software application associated with an IP flow; and

allocating means for allocating resources to said IP flow, responsive to said identifying means, so as to optimize end user application IP QoS requirements of said software application, wherein said resource allocating means allocates resources in a packet-centric manner that is not circuit-centric and does not use asynchronous transfer mode (ATM).

Claim 1 of Asserted '206 Patent

1. A method for IP flow classification grouping IP flows in a packet-centric wireless point to multi-point telecommunications system, said method comprising:

• • •

allocating said shared wireless bandwidth to communication of said IP flow between said wireless base station and a subscriber CPE station, so as to optimize end-user quality of service (QoS) associated with said IP flow.

- **No distinction between these phrases**
  - In the patents
  - In the prosecution history
  - In the inventor's testimony

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- Both the invalidated claim and the asserted claims recite: Optimizing "end user QoS

Claim 20 of the Adjudicated Jorgensen Patent

20. An application-aware media access control (MAC) layer for optimizing end user application internet protocol (IP) quality of service (QoS) to IP flows comprising:

identifying means for identifying an application type of a software application associated with an IP flow; and

allocating means for allocating resources to said IP flow, responsive to said identifying means, so as to optimize end user application IP QoS requirements of said software application, wherein said resource allocating means allocates resources in a packet-centric manner that is not circuit-centric and does not use asynchronous transfer mode (ATM).

Claim 19 of Asserted '206 Patent

19. The method according to claim **1**, further comprising: allocating shared wireless bandwidth to said subscriber CPE station so as to optimize end-user internet protocol (IP) quality of service (QoS).

- **No distinction between these phrases**
  - In the patents
  - In the prosecution history
  - In the inventor's testimony

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

"Our precedent does not limit collateral estoppel to patent claims that are identical. Rather, it is the identity of the *issues* that were litigated that determines whether collateral estoppel should apply."

Ohio Willow Wood Co. v. Alps South, LLC, 735 F.3d 1333, 1342 (Fed. Cir. 2013) (emphasis in original)

Patents Treat End-User QoS for Application and IP Flow Interchangeably

- The patents confirm that there is no difference between QoS requirements of an application and QoS requirements of an IP flow

Simply providing "adequate" bandwidth is not a sufficient QoS mechanism for packet-switched networks, and certainly not for wireless broadband access systems. Although some IP-flows are "bandwidth-sensitive," other flows are latency- and/or jitter-sensitive. Real time or multimedia flows and applications cannot be guaranteed timely behavior by simply providing excessive bandwidth, even if it were not cost-prohibitive to do so. It is desirable that QoS mechanisms for an IP-centric wireless broadband access system recognize the detailed flow-by-flow requirements of the traffic, and allocate system and media resources necessary to deliver these flows in an optimal manner.

'206 Patent 13:17-28

If the IP flow is new, control passes to module **1632** from module **1624** of the packet header identification component **1602**. If in module **1624** it is determined that the application associated with the IP flow application is not known to the system, in IP flow QoS requirements lookup module **1632** the QoS requirements for the application associated with the IP flow are determined. Module **1632** performs this operation by looking up the application in IP flow QoS requirement table **1634**. Different applications have different requirements. For example, bandwidth allocation (i.e., allocating an appropriate amount of bandwidth) is important to an application performing FTP downloads, and not jitter (i.e., time synchronizing the received data) and latency (i.e., the amount of time passage between responses). On the other hand, jitter and latency are important to voice telephony and conference calls, and bandwidth allocation is not.

'206 Patent at 68:24-39

IV's Delaware Arguments Confirm Identicality of Issues

- In the Delaware case, IV equated end user QoS requirements of an IP flow (traffic) and end user QoS requirements of an application
- IV now relies on the same "application" disclosure" as showing "end user Qos for an IP flow"

In response to these arguments, Plaintiffs identify portions of the specification that "provide[] specific examples of which QoS criteria are the 'best measure' of end-user QoS for particular applications." (JCCB at 144 (citing '248 patent at 2:54-62, 14:43-50)) The cited

STARK, U.S. District Judge:

Dkt. 20 Ex. 7, (Claim Construction Mem. Op., Stark, J.)

Telecommunication networks such as voice, data and video networks have conventionally been customized for the type of traffic each is to transport. For example, voice traffic is very latency sensitive but quality is less important, so voice networks are designed to transport voice traffic with limited latency. Traditional data traffic, such as, e.g., a spreadsheet, on the other hand is not latency sensitive, but error-free delivery is required. Conventional telecommuni-

Dkt. 20 Ex. 5, the Adjudicated '248 Patent at 2:54-62

experience. For some applications such as an initial screen of a Web page download, data transmission speed is the best measure of QoS. For other applications, such as the download or upload of a spreadsheet, the best measure of QoS can be the minimization of transmission error. For some applications, the best measure of QoS can be the optimization of both speed and error. For some applications, the timely delivery of packets can be the best measure of QoS.

Dkt. 20 Ex. 5, the Adjudicated '248 Patent at 14:43-50

Cited by IV in Dkt.111 at 9 as showing end user QoS for an IP flow

IV's Delaware Arguments on the '248 Patent Confirm Identicality of Issues

- IV stated to the Delaware Court (when arguing about optimizing end user QoS for an application) that a "key goal" of the patent is to "optimize the flow"

MR. DUCKER: So the next term is the "allocating means," and there is two disputes.

The first is, does the patent teach "optimizing," or to optimize, with sufficient specificity?

* * *

This is not the case, Your Honor, where there is no teaching in the patent how to optimize. In fact, that is one of the key goals, as Mr. Black said, is to optimize the flow, the downlink flow or the uplink flow based on application type.

It starts out at the very beginning. It's best to understand quality of service as a continuum, defined by what network performance characteristic is most important to a user.

It tells you what can create poor flow: Poor quality in steaming can result from high jitter, or large rapid variations in latency.

Dkt. 20 Ex. 6 (DE Markman Hearing Tr.), at 122:1-4, 122:10-21

IV's Appeal Arguments on the '248 Patent Confirm Identity of Issues

- IV's claim construction brief argues for a different result because optimizing IP flows is performed by a network operator

> The claimed invention is directed to methods and systems of allocating network resources in order to optimize end user QoS associated with each IP flow. It follows that this optimization happens at the network level, through the application of network scheduling functions. Thus, a person of ordinary skill in the art would understand that the task of optimizing end-user QoS associated with an IP flow is performed by a network operator. *See, e.g., id.* at 51:4-16, 57:1-10.

Dkt. 111 (IV's Opening Claim Construction Brief) at 10

- IV made the same "network operator" argument to the Federal Circuit with respect to the "optimizing QoS for an application" term at issue there

> familiar with or understand. The patent, the claim, and that particular phrasing were directed to a POSITA, who would understand that the claim requires optimizing a particular data flow associated with an application *from the perspective of the network operator*. The goal is to assist the end users, but the work of optimizing is done by the network operator. Those are the persons to whom the '248 patent is directed and whose perspective matters in construing the claims. *See, e.g., Phillips*, 415 F.3d at 1313 (Fed. Cir. 2005) ("the ordinary and

IV's Opening Appeal Brief (No. 2017-2434) at 49

IV's Claim Construction Briefing Confirms Identicality of Issues

- In IV's motion to dismiss briefing, it promised to show differences between end user QoS requirements for a flow and an application during claim construction

> Ericsson also argues that the Court can ignore the difference in claim language because the shared specification discusses QoS requirements for an application in the same manner as QoS requirements for an IP flow.[1] *Id.* at 3 n.4. IV contests that assertion. How one of skill in the art would read those two requirements is a question that will have to be addressed at claim construction, but it cannot be resolved based on attorney argument. Reading the patent in the

Dkt. 44 at 3-4

- But IV's claim construction brief only confirms there are no differences

IV's Claim Construction Briefing Confirms Identicality of Issues

- IV abandons its distinction of end-user QoS for an "IP flow" and for an "application" by drawing its proposed construction from the prosecution history of a claim reciting optimizing *any* end-user QoS.

Representative Claims of '622 Patent Relied on By IV

5. The system of claim 4, wherein said resource allocation means allocates said shared wireless bandwidth so as to optimize end-user quality of service (QoS).

...

11. The system of claim 10, wherein said resource allocator optimizes end-user quality of service (QoS).

...

14. The system of claim 13, further comprising:

resource allocation means for allocating said shared wireless bandwidth among said subscriber CPE stations and wherein said resource allocation means comprises means for performing bandwidth allocation to ensure optimal end-user quality of service (QoS).

Dkt. 111 Ex. 7 at 18-20 ('622 Patent Prosecution History, Applicant's 1/6/03 Appeal Brief)

IV's Claim Construction Briefing Confirms Identicality of Issues

- The prosecution history that IV relies upon to establish the meaning of optimizing end-user QoS of an IP flow explicitly states that it refers to optimizing end-user QoS of an application
- There is no difference between these concepts

> Appellant's invention sets forth a system, method and computer program product that allocates shared resources between a base station and a plurality of CPE stations so as to optimize end-user QoS. Enduser QoS is the QoS associated with an enduser application of a packet, not a QoS of a network or a connection as discussed in Whitehead. See Whitehead at col. 14, lines 35 and 36, claims 23, 28 and 32, and abstract. Whitehead is concerned with

Dkt. 111 Ex. 7 at 12 ('622 Patent Prosecution History, Applicant's 1/6/03 Appeal Brief)

Dependent Claims do not Affect Issue Preclusion Analysis

- The dependent claims instruct what to do in addition to optimizing end user QoS, they do not inform what optimizing is

> **121**. The method according to claim **109**, the step of scheduling further comprising:
> allocating resources of said shared wireless bandwidth among a plurality of wireless network stations to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow.

'206 Patent at Claim 121

> **129**. The method according to claim **121**, the step of allocating further comprising:
> accounting for service level agreement (SLA) based priorities for said IP flow.

'206 Patent at Claim 129

Dependent Claims do not Affect Issue Preclusion Analysis

12. A quality of service (QoS) aware, wireless communications system comprising:

a wireless access point base station coupled to a first data network;

one or more host workstations coupled to said first data network;

one or more wireless network stations in wireless communication with said wireless access point base station over a shared wireless network using a packet-centric protocol; and

a scheduler that allocates resources of said shared wireless network among said wireless network stations to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow, wherein said IP flow is associated with at least one of a latency-sensitive and a jitter-sensitive application;

wherein said scheduler comprises assigning means for assigning future slots of a transmission frame to a portion of said IP flow in said transmission frame for transmission over said shared wireless network,

wherein said assigning means comprises:

means for applying an advanced reservation algorithm:

means for reserving a first slot for a first data packet of an Internet Protocol (IP) flow in a future transmission frame based on said algorithm:

means for reserving a second slot for a second data packet of said IP flow in a transmission frame subsequent in time to said future transmission frame based on said algorithm,

wherein said second data packet is placed in said second slot in an isochronous manner to the placing of said first data packet in said first slot.

’971 Patent at Claim 12

18. The system of claim **12**, wherein said scheduler comprises:

means for taking into account service level agreement (SLA) based priorities for said IP flow.

’971 Patent at Claim 18

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- There is no difference between optimizing end-user QoS for an application and optimizing end user QoS for an IP flow
- Confirmed by:
  - The patent claim ('248 Patent, claim 20) equating the two
  - The patent specification equating the two
  - IV equating the two in its arguments in Delaware for the '248 Patent
  - IV equating the two in its arguments to the Federal Circuit for the '248 Patent
  - IV equating the two in its claim construction briefing (relying on prosecution history for *any* end-user QoS)
  - The inventor's testimony

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

Identical issue	✓
Fully and vigorously litigated	✓
Necessary to support the judgment	✓
No special circumstances (Federal Circuit Affirmed)	✓

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- "optimize end user QoS" is recited in all asserted claims and has been found to be indefinite
- Issue preclusion prevents IV from relitigating that issue here

In explaining what it means to "optimize" end user QoS, the specification indicates that QoS is subjective and that QoS can vary from user to user based on individual preferences. (*See* '248 patent at 13:20-27 (explaining that system seeks to "provide[] user[s] with optimal service, in whatever manner the user defines it"); *see also id.* at 12:62-65 (explaining that QoS is continuum that is "defined by what network performance characteristic is most important to a particular user")) This subjective, user-based understanding would make it difficult, if not impossible for a POSA to ascertain, with reasonable certainty, whether the claim limitation is satisfied by any particular embodiment. As Defendants' expert opined, the specification "provides no objective boundaries" and leaves the standard for measuring optimization "completely unbounded." (D.I. 210-6 Ex. A5 ¶¶ 78-81)

In response to these arguments, Plaintiffs identify portions of the specification that "provide[] specific examples of which QoS criteria are the 'best measure' of end-user QoS for particular applications." (JCCB at 144 (citing '248 patent at 2:54-62, 14:43-50)) The cited portions of the specification, however, do not provide adequate guidance as to the meaning of "optimize," nor do they rectify the indefiniteness of the portions of the specification indicating that QoS is subjective and varies by user. Based on the intrinsic and extrinsic evidence, the Court is persuaded, by clear and convincing evidence, that the term "optimize," as it is used in the '248 patent is indefinite.[9]

Dkt. 20 Ex. 7, Intellectual Ventures I v. T-Mobile USA, Inc., 1:13-cv-1671, Dkt. 370, at *21 (D. Del. Aug. 12, 2016) (Claim Construction Mem. Op.) (Stark, J.)

Terms of Degree Render a Claim Invalid where they Require Subjective Definition

"[A] term of degree fails to provide sufficient notice of its scope if it depends on the unpredictable vagaries of any one person's opinion."

Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1371 (Fed. Cir. 2014)

The Claim Term at Issue

- IV's brief repeatedly excises the words "end user" from the claim term at issue – arguing that the issue is simply how to "optimize an IP flow"
  - Dkt. 126 at 5 ("patents teach how to optimize an IP flow"), 6 ("what is optimized in the asserted claims is an IP flow" and "the claims require optimizing for *an IP flow*")

- But every claim specifically recites optimizing end user QoS
  - "to optimize end-user quality of service (QoS) [for an Internet Protocol (IP) flow / associated with said IP flow]" ('971 Patent, Claim 12; '206 Patent, Claims 1, 121)
  - "to optimize end-user internet protocol (IP) quality of service (QoS)" ('206 Patent, Claim 19)

- IV argues as if "optimizing end-user QoS" is not recited in the claims

"Optimize" Is a Term of Degree, Depending on One Person's Opinion

- End-user QoS varies depending on the individual user

QoS can be a relative term, finding different meanings for different users. A casual user doing occasional web browsing, but no file transfer protocol (FTP) file downloads or real time multimedia sessions may have different a different definition of QoS than a power user doing many FTP file downloads of large database or financial files, frequent H.323 video conferencing and IP telephony calls. Also, a user can pay a premium rate (i.e. a so-called service level agreement (SLA)) for high network availability, low latency, and low jitter, while another user can pay a low rate for occasional web surfing only, and on weekends only. Therefore, perhaps it is best to understand QoS as a continuum, defined by what network performance characteristic is most important to a particular user and the user's SLA. Maximizing the end-user experience is an essential component of providing wireless QoS.

. . .

d. Summary—QoS Mechanisms

Ultimately, the end-user experience is the final arbiter of QoS. It is desirable that an IP-centric wireless broadband

'206 Patent 11:41-56, 13:29-31

"Optimize" Is a Term of Degree, Depending on One Person's Opinion

- The patents define "optimal" as "***whatever manner the user defines it***."
  - There is no definition of "optimizing end user QoS for an IP flow" that is different from "optimizing end user QoS for an application"
  - One definition – depends on the user
- "Optimized" depends on the "***unpredictable vagaries of any one person's opinion***," rendering the claim indefinite. *See Interval Licensing*, 766 F.3d at 1371.

> QoS can be thought of as a mechanism to selectively allocate scarce networking, transmission and communications resources to differentiated classes of network traffic with appropriate levels of priority. Ideally, the nature of the data traffic, the demands of the users, the conditions of the network, and the characteristics of the traffic sources and destinations all modify how the QoS mechanism is operating at any given instant. Ultimately, however, it is desirable that the QoS mechanism operate in a manner that provides the user with optimal service, in whatever manner the user defines it.

'206 Patent 12:7-17

IV's Proposed Construction Is Divorced from the Intrinsic Record

- The term: "to optimize end-user quality of service (QoS) [for an Internet Protocol (IP) flow / associated with said IP flow]"

IV's Construction
"[so as] to differentiate between types of traffic or service types and allocate a different level of system resources to an Internet Protocol (IP) flow"

- Wrongly reads "end-user QoS" and "optimizing" out of the claims
  - Any differentiation and allocation at all – even if wholly unrelated to QoS, would suffice
  - Any differentiation and allocation at all – even if not optimal in anyone's view, would suffice

IV's Proposed Construction Is Divorced from the Intrinsic Record

- IV wrongly reads "optimizing" out of the claims

IV's Construction

"[so as] to differentiate between types of traffic or service types and allocate a different level of system resources to an Internet Protocol (IP) flow"

109. A method for scheduling packets comprising:
classifying a plurality of packets according to end-user quality of service (QoS) requirements of said plurality of packets; and
scheduling said plurality of packets for communication in at least one of an upstream direction and a downstream direction over a shared wireless bandwidth according to a scheduling algorithm.

121. The method according to claim **109**, the step of scheduling further comprising:
allocating resources of said shared wireless bandwidth among a plurality of wireless network stations to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow.

IV's Proposed Construction Is Divorced from the Intrinsic Record

- IV wrongly reads "optimizing" out of the claims

In order to implement a practical QoS mechanism, it is desired that a system be able to differentiate between types of traffic or service types so that differing levels of system resources can be allocated to these types. It is customary to speak of "classes of service" as a means of grouping traffic types that can receive similar treatment or allocation of system and media resources.

'206 Patent 14:10-16

109. A method for scheduling packets comprising:
classifying a plurality of packets according to end-user quality of service (QoS) requirements of said plurality of packets; and
scheduling said plurality of packets for communication in at least one of an upstream direction and a downstream direction over a shared wireless bandwidth according to a scheduling algorithm.

- IV's specification citations relate to claims like 109, which do not require optimizing

121. The method according to claim **109**, the step of scheduling further comprising:
allocating resources of said shared wireless bandwidth among a plurality of wireless network stations to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow.

IV's Proposed Construction Does not Provide Reasonable Certainty to POSITA

- The prosecution history distinguished prior art that could not "differentiate between types of traffic or service types"
- Of course, if traffic or service types are not differentiated (all are treated the same), nothing can be done to optimize the end-user's QoS, because no tradeoffs can be made between competing interests
- But merely differentiating services does not inform ***how*** each differentiated service should be treated so that the end-user QoS is optimized
- Differentiated services can be allocated in optimal and non-optimal ways. It's up to the user to determine what tradeoffs are optimal once services have been differentiated

The present invention ***optimizes*** end-user quality of service (QoS) by ***differentiating between types of traffic or service types*** so that differing levels of system resources can be allocated to these different types. See Specification, from line 23 of page 24 to line 2 of page 25; page 97, lines 14-18; page 119, lines 1-6. By creating a finite number of ***discrete classes of service***, multiple IP flows can be consolidated and handled with a given set of ***QoS*** parameters by the QoS mechanisms. See Specification, page 31, lines 21-22. As discussed in detail below, Meier does ***not*** teach or suggest ***a resource allocator*** that allocates shared bandwidth to the subscriber CPE station and ***optimizes end-user quality of service (QoS)***.

...

Meier ***fails*** to disclose a resource allocator that ***optimizes end-user quality of service (QoS)***. End-user quality of service (QoS) is not optimized in Meier because ***differentiating between types of traffic or service types*** is required in order to ***optimize*** end-user quality of service (***QoS***). Meier does not differentiate between traffic types. Transmitting HELLO

Dkt. 111 Ex. 5, at 13-14

Optimizing End User QoS Requires Tradeoffs

- The patents seek to optimize end-user QoS in the context of a network with multiple users and multiple IP flows competing for limited resources.

optimize service for an individual IP flow. In a telecommunications environment where there are multiple users and multiple IP flows competing for limited network resources, the network operator needs to make trade-offs in the allocation of those resources. That is the subject of the patents in dispute. The specification describes how a network will seek to provide optimized IP flows in an environment where multiple IP flows are competing for the network resources.

Dkt. 126 Ex. 10 (Second Williams Decl.), Paragraph 8

IV's Proposed Construction Is Divorced from the Intrinsic Record

- Differentiating traffic and service type are not the end of the QoS mechanism inquiry – the user must define what treatment is optimal

QoS can be thought of as a mechanism to selectively allocate scarce networking, transmission and communications resources to differentiated classes of network traffic with appropriate levels of priority. Ideally, the nature of the data traffic, the demands of the users, the conditions of the network, and the characteristics of the traffic sources and destinations all modify how the QoS mechanism is operating at any given instant. Ultimately, however, it is desirable that the QoS mechanism operate in a manner that provides the user with optimal service, in whatever manner the user defines it.

'206 Patent 12:7-17

IV Is Issue Precluded from Relitigating the Indefiniteness of the "Optimize" Terms

- The Federal Circuit has affirmed that "optimiz[ing] . . . QoS" is indefinite

United States Court of Appeals
for the Federal Circuit

INTELLECTUAL VENTURES I LLC,
Plaintiff-Appellant

v.

T-MOBILE USA, INC., T-MOBILE US, INC., ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON, UNITED STATES CELLULAR CORPORATION,
Defendants-Appellees

By the '248 patent's own terms, "optimiz[ing] . . . QoS" is a "term of degree" that, like the "aesthetically pleasing" limitation in *Datamize*, is "purely subjective" and depends "on the unpredictable vagaries of any one person's opinion." 417 F.3d at 1350–51. As in *Datamize*, merely understanding that "optimiz[ing] . . . QoS" relates to the end-user experience "fails to provide one of ordinary skill in the art with any way to determine whether" QoS has been "optimiz[ed]." We see no error in the district court's

Decision from Federal Circuit Court of Appeals in *IV v. T-Mobile et al*. (September 4, 2018), at 15

"Optimize" Lacks an Objective Boundary

44. It is my opinion that the shared specification of the '971 and '206 Patents, which is the same shared specification recited in the '248 Patent, provides no objective boundaries for determining the meaning of "to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow." The shared specification acknowledges that QoS requirements vary, specifically that "QoS can be a relative term, finding different meanings for different users." '971 Patent 13:12–13; '206 Patent 11:41–42. For example, "the nature of the data traffic, the demands of the users, the conditions of the network, and the characteristics of the traffic sources and destinations all modify how the QoS mechanism is operating at any given instant. Ultimately, however, it is desirable that the QoS mechanism operate in a manner that provides the user with optimal service, *in whatever manner the user defines it*." '971 Patent 13:48–55; '206 Patent 12:10–17 (emphasis added).

Dkt. 118 Ex. 1, Declaration of Dr. Izhak Rubin, Ph.D., ¶ 44

47. In my opinion, a person of ordinary skill in the art would not understand these descriptions as providing the necessary boundaries for performing optimization of end-user QoS for an IP flow. The specification does not provide any objective guidance for one of ordinary skill to determine ***how*** to perform the claimed optimization of "end-user quality of service (QoS) for an Internet Protocol (IP) flow," much less measure ***whether*** and ***when*** such optimization has been achieved.

Id. at 47

IV's Proposed Construction Does not Provide Reasonable Certainty to POSITA

- As explained by Professor Rubin, knowing to treat similar groups in a similar manner when allocating resources does not provide objective guidance on how to perform the claimed "optimization."

52. In fact, differentiating service or traffic types, as Dr. Williams proposes, is even further removed from the claimed "optimization" of end-user IP QoS than adjusting metrics like jitter, latency, and error, and therefore provides even less guidance to a POSITA on how to perform the claimed optimization or measure when optimization has been achieved. As the specification explains, differentiating service or traffic types permits service or traffic of the same type to receive similar treatment: "In order to implement a practical QoS mechanism, it is desired that a system be able to differentiate between types of traffic or service types *so that differing levels of system resources can be allocated to these types*. It is customary to speak of 'classes of service' as a *means of grouping traffic types that can receive similar treatment or allocation of system and media resources*." '971 Patent 15:52–58; '206 Patent 14:10–16; *see also* '971 Patent 19:20–25; '206 Patent 17:44–49. Knowing that one might differentiate traffic or service types (or even IP flow types) in order to treat similar groups in a similar manner when allocating resources does not provide objective guidance on how to perform and use such a differentiation in a manner that "optimizes" end-user QoS for an IP flow as required by the claim.

Dkt. 118 Ex. 1, Declaration of Dr. Izhak Rubin, Ph.D., ¶ 52

IV's Reliance on *Sonix* Is Misplaced

- IV cites *Sonix* to suggest that summary judgment of indefiniteness is inappropriate when there are competing expert opinions.
- There mere fact that there are competing expert opinions does not justify a finding of no indefiniteness, and *Sonix* did not suggest anything to the contrary.
  - *See, e.g.*, *Dow Chemical Co. v. Nova Chemicals Corp.*, 803 F.3d 620, 633-35 (Fed. Cir. 2015) (affirming indefiniteness of term, despite testimony from plaintiff's expert that term is not indefinite);
  - *Icon Health & Fitness Inc. v. Polar Electro Oy*, 656 Fed. App'x 1008 (Fed. Cir. 2016) (affirming indefiniteness of term where there was competing expert testimony)
- *Sonix* is distinguishable –
  - Unlike the "visually negligible" term at issue in *Sonix*, the "optimize" terms are not tied to an "objective baseline" such as "what can be seen by the normal human eye."
  - Unlike the accused infringer in *Sonix*, Defendants have maintained the indefiniteness of "optimize" since their first invalidity contentions, and indeed, since before this case was filed.

“in an isochronous manner”

The ’629 Patent: Claim 1; ’971 Patent, Claim 12; ’206 Patent, Claim 123

The Parties' Proposed Constructions

"in an isochronous manner" ('629 Patent, Claim 1; '971 Patent, Claim 12; '206 Patent, Claim 123)

Defendants' Construction	IV's Construction
"according to a consistent time interval"	"in a manner which provides for consistent timed access"

Dispute(s):

- Whether the term is more appropriately understood by a jury in terms of consistent time intervals or the relatively more confusing and ambiguous term "consistent timed access"

IV's Opening Brief Confirms that Intervals are Key to '629 Solution

- IV's brief explains that the '629 Patent uses intervals to address issues.

> transmitted across a network serving many IP flows simultaneously. The '629 patent also addresses a problem that arises in a wireless packet-switched network, namely the jitter and other quality problems that can arise when certain IP flows are scheduled with irregular time gaps between the packets. The '517 patent is directed to the allocation of bandwidth among the

IV's Opening Br. (Dkt. No. 111), at 2

- The solution to the problem of "irregular time gaps between the packets" is packets being placed in frames "in an isochronous manner."

> **1**. A method for assigning future slots of a transmission frame to a data packet in the transmission frame for transmission over a wireless medium, comprising:
>
> . . .
>
> wherein said second data packet is placed in said second slot in an isochronous manner to the placing of said first data packet in said first slot.

'629 Patent at Claim 1

> **12**. A quality of service (QoS) aware, wireless communications system comprising:
>
> . . .
>
> wherein said second data packet is placed in said second slot in an isochronous manner to the placing of said first data packet in said first slot.

'629 Patent at Claim 1

Specification

- The specification uses the term "isochronous," but does not explicitly define the claim term "in an isochronous manner."

respect to FIGS. 8A and 8B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical

'629 Patent at 61:41-46

without the use of a common clock) as well as isochronous (i.e.consistent timed access of network bandwidth for time-sensitive voice and video) traffic. Circuit-switched QoS was

'629 Patent at 13:58-60

Specification

- "in an isochronous manner" means according to a constant time interval

respect to FIGS. 8A and 8B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical reservation **1480** shows a jitter sensitive signal receiving the same slot for downlink communications in each frame. Specifically, the signal is assigned slot **1422** in frames **1402**–**1416**. If the frame-to-frame interval is 0.5 ms, then a slot will be provided to the IP flow every 0.5 ms. As another example, diagonal reservation **1482** shows a jitter sensitive signal receiving a slot varying by a period of one between sequential frames. Specifically, the signal is assigned slot **1440** in frame **1402**, slot **1438** in slot **1404**, . . . slot **1426** in frame **1416**, to create a "diagonal." If the frame-to-frame interval is 0.5 ms and the slot-to-slot interval is 0.01 ms, then a slot can be provided to the IP flow every 0.5 minus 0.01, equals 0.49 mms. Thus, to decrease the frame interval, a

'629 Patent at 61:41-59

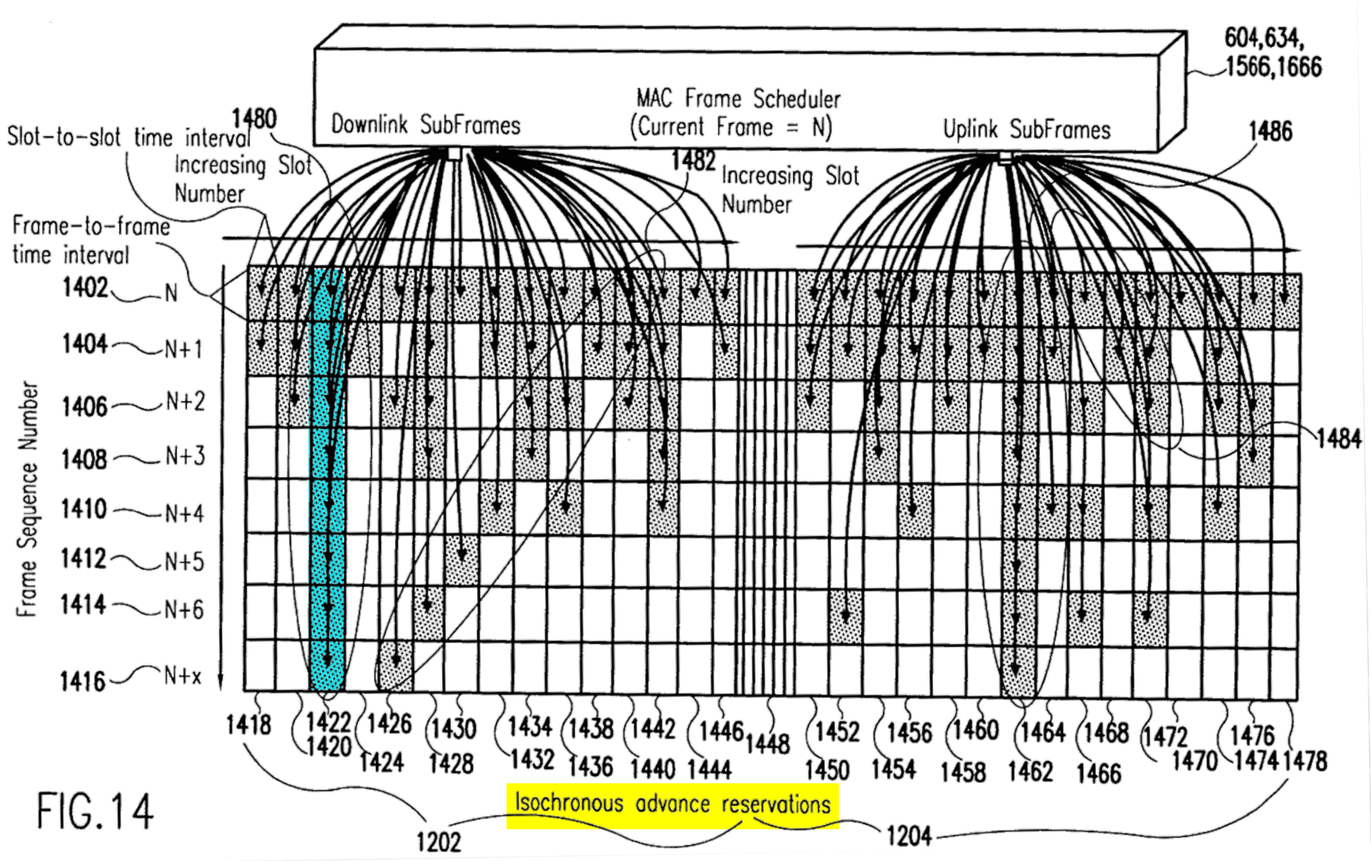


FIG.14

'629 Patent Figure 14

The Parties' Proposed Constructions

"in an isochronous manner" ('629 Patent, Claim 1; '971 Patent, Claim 12; '206 Patent, Claim 123)

Defendants' Construction	IV's Construction
"according to a consistent time interval"	"in a manner which provides for consistent timed access"

- Defendants' construction uses an understandable term (interval) that the patent uses to describe "isochronous" placement.

- IV's construction leaves ambiguity (access to what?) and results in a nonsensical read of the claim

“periodic variation”

The ’629 Patent: Claim 3; ’971 Patent, Claim 14

Claim Construction Table Slide

“periodic variation” (’629 Patent, Claim 3; ’971 Patent, Claim 14)

Defendants’ Construction	IV’s Construction
“changing of the placement between frames, while maintaining a consistent time interval”	Plain meaning, regular variation of the location within frames into which the data is successively placed

Dispute(s):

- Does the periodic variation still have to be isochronous?
- Do the first and second packets need to be in different frames?

’629 Patent at Claims 1,2, & 3

1. A method for assigning future slots of a transmission frame to a data packet in the transmission frame for transmission over a wireless medium, comprising:

applying a reservation algorithm;

reserving a first slot for a first data packet of an internet protocol (IP) flow in a future transmission frame based on said reservation algorithm; and

reserving a second slot for a second data packet of said IP flow in a transmission frame subsequent in time to said future transmission frame based on said reservation algorithm,

wherein said second data packet is placed in said second slot in an isochronous manner to the placing of said first data packet in said first slot.

2. The method of claim **1**, wherein there is a periodic variation between the placing of said first data packet in said first slot and the placing of second data packet in said second slot.

3. The method of claim **1**, wherein there is no periodic variation between the placing of said first data packet in said first slot and the placing of second data packet in said second slot.

’629 Patent at Claims 1, 2, and 3

* The comma between “frame” and “subsequent” in line 35 was a printing error and has been removed by agreement of the parties

Specification

- With or without a "periodic variation," placement must still be "in an isochronous manner" (according to a constant time interval)

respect to FIGS. **8**A and **8**B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical reservation **1480** shows a jitter sensitive signal receiving the same slot for downlink communications in each frame. Specifically, the signal is assigned slot **1422** in frames **1402**–**1416**. If the frame-to-frame interval is 0.5 ms, then a slot will be provided to the IP flow every 0.5 ms. As another example, diagonal reservation **1482** shows a jitter sensitive signal receiving a slot varying by a period of one between sequential frames. Specifically, the signal is assigned slot **1440** in frame **1402**, slot **1438** in slot **1404**, . . . slot **1426** in frame **1416**, to create a "diagonal." If the frame-to-frame interval is 0.5 ms and the slot-to-slot interval is 0.01 ms, then a slot can be provided to the IP flow every 0.5 minus 0.01, equals 0.49 mms. Thus, to decrease the frame interval, a

'629 Patent at 61:41-59

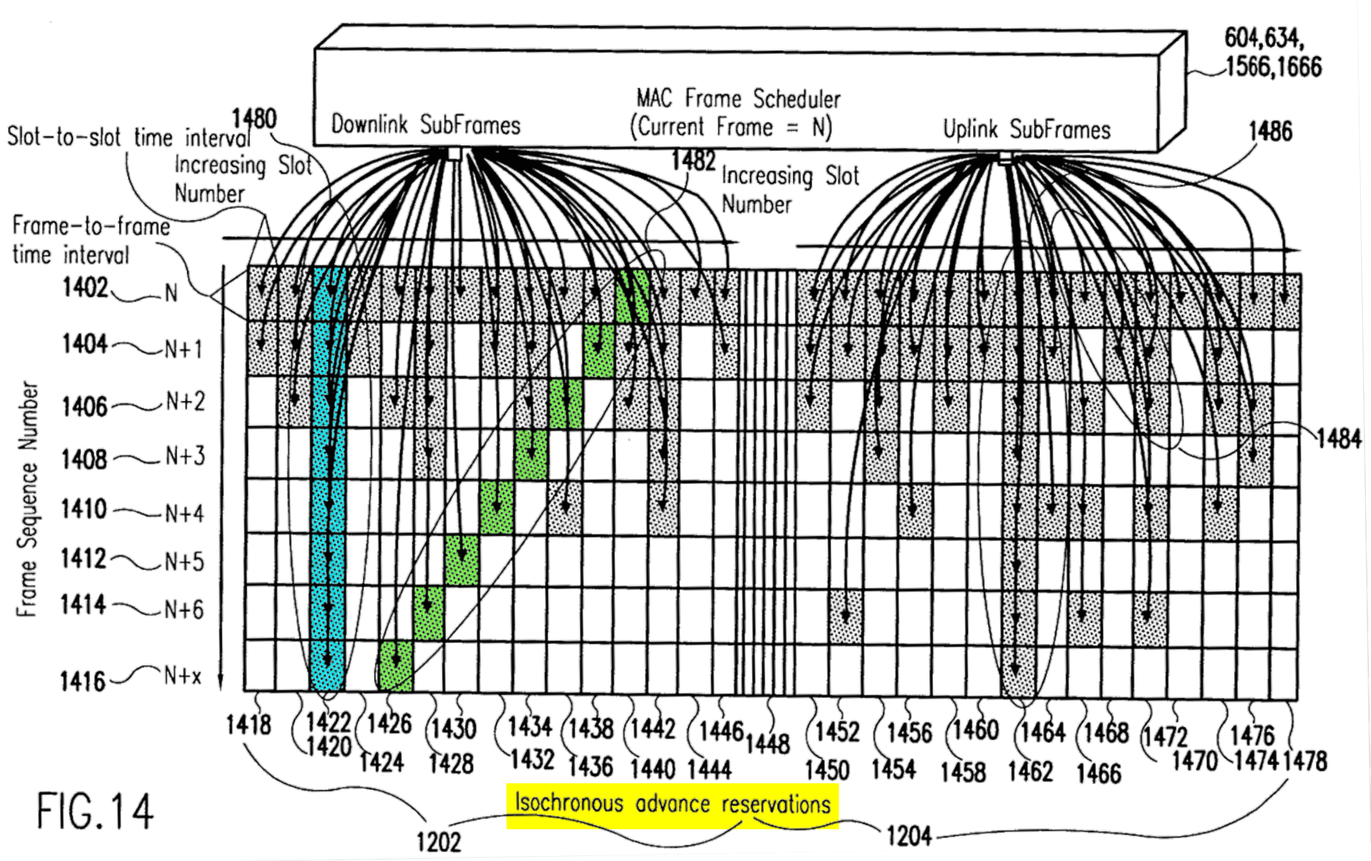


FIG.14

'629 Patent Figure 14

IV's Opening Brief

- IV's brief agrees that any "periodic variation" still requires that the second packet be placed "in an isochronous manner" (according to a consistent time interval).
- IV's brief also agrees that the relevant placement occurs in <u>successive</u> transmission frames, not within a single frame:

> second slot." In the claimed method, the number of time slots between the placement of the first and second data packets is consistent, but it results in the data packets being placed in a different slot location within successive transmission frames. Thus, the location of the data packet within

IV's Opening Br. (Dkt. No. 111), at 4

’629 Patent at Claims 1,2, & 3

- The first and second packets are placed into slots of <u>different</u> frames
  - First packet in a “future transmission frame”
  - Second packet in a transmission frame “subsequent in time to said future transmission frame”

1. A method for assigning future slots of a transmission frame to a data packet in the transmission frame for transmission over a wireless medium, comprising:

applying a reservation algorithm;

reserving a first slot for a first data packet of an internet protocol (IP) flow in a future transmission frame based on said reservation algorithm; and

reserving a second slot for a second data packet of said IP flow in a transmission frame subsequent in time to said future transmission frame based on said reservation algorithm,

wherein said second data packet is placed in said second slot in an isochronous manner to the placing of said first data packet in said first slot.

2. The method of claim **1**, wherein there is a periodic variation between the placing of said first data packet in said first slot and the placing of second data packet in said second slot.

3. The method of claim **1**, wherein there is no periodic variation between the placing of said first data packet in said first slot and the placing of second data packet in said second slot.

’629 Patent at Claims 1, 2, and 3

* The comma between “frame” and “subsequent” in line 35 was a printing error and has been removed by agreement of the parties

“host workstation”

The ’971 Patent: Claims 12

Parties' Proposed Constructions

"host workstation" ('971 Patent, Claim 12)

Defendants' Construction	IV's Construction
"end-point running one or more applications and capable of serving as the source or destination of an IP flow to or from a subscriber end-point"	Plain meaning, a computer or other device that communicates with other computers on a network and includes a terminal or interface to accept input

Agreement(s):

- "host workstations" must run applications. Dkt. 126 at 2 ("IV does not dispute that a host workstation runs applications")

Dispute(s):

- Whether a host workstation is particular type of endpoint as described in the '971 Patent (Defendants), or is merely any network device that accepts input (IV)

A “host workstation” Is an End-Point

- Throughout the ’971 patent, every workstation is described as an end-point and not an intermediate device.

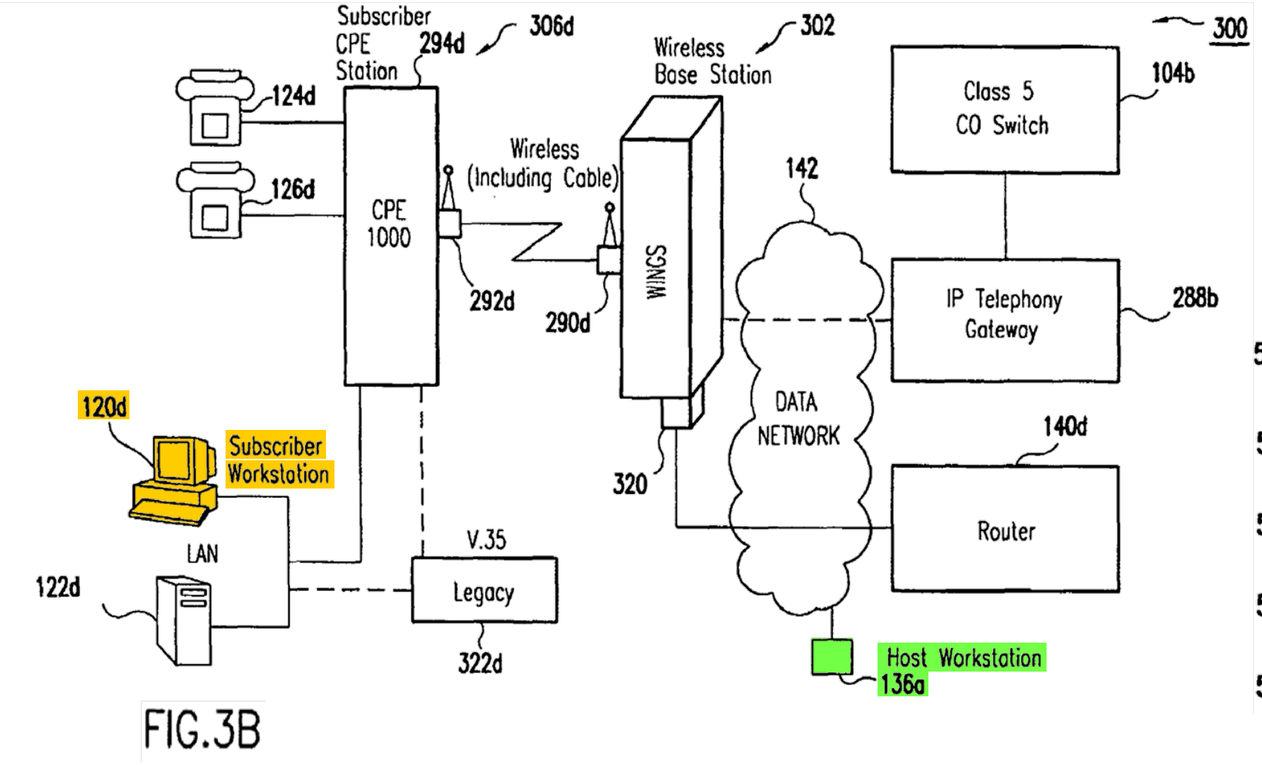


FIG.3B

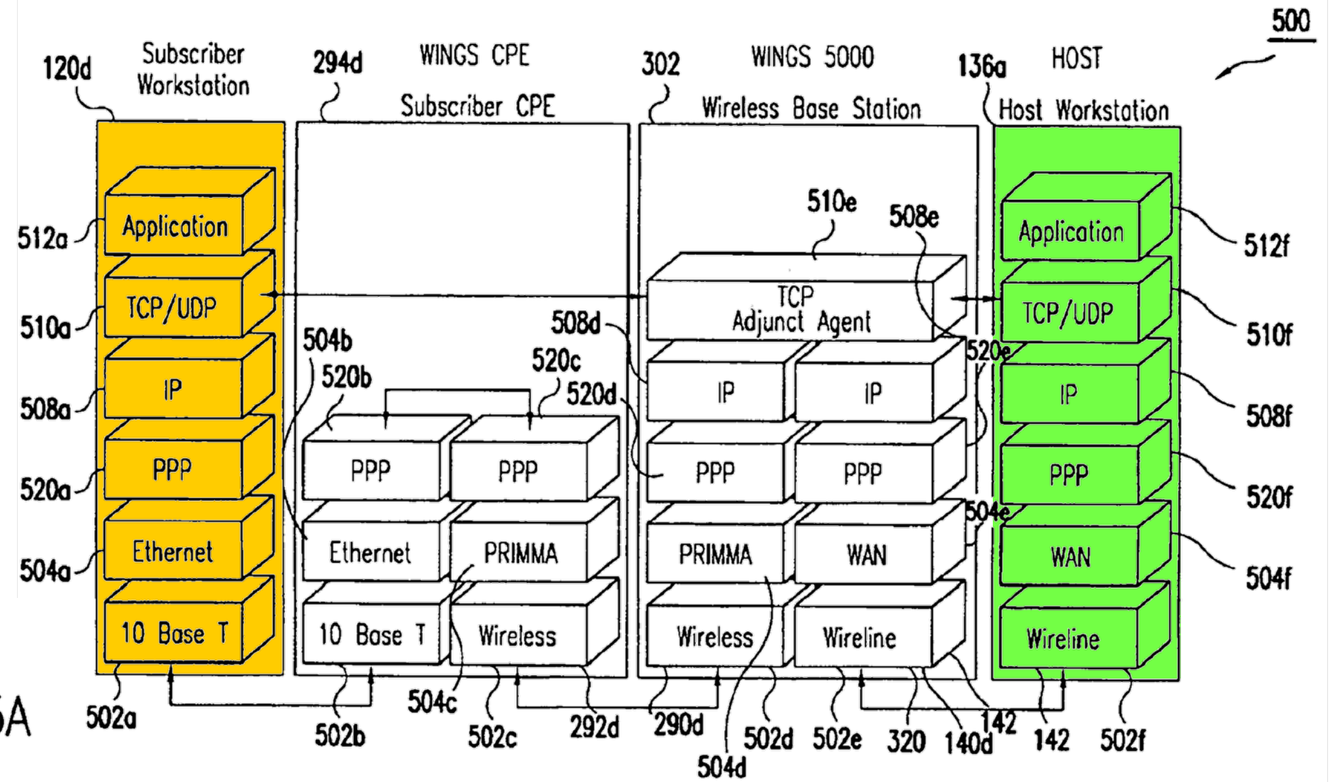


FIG.5A

’971 Patent at Fig. 3B & 5A

A "host workstation" Runs Applications that Serve as the Source or Destination of IP Flows to a Subscriber End-Point

Flow **500** includes IP flows from application layer **512***a*, down the protocol stack through TCP/UDP layer **510***a*, through IP layer **508***a*, then through point-to-point (PPP) layer **520***a*, then through data link Ethernet layer **504***a*, then through 10BaseT Ethernet network interface card (NIC) physical layer **502***a*, over a wire line connection to 10BaseT Ethernet NIC physical layer **502***b* of subscriber CPE **294***d*.

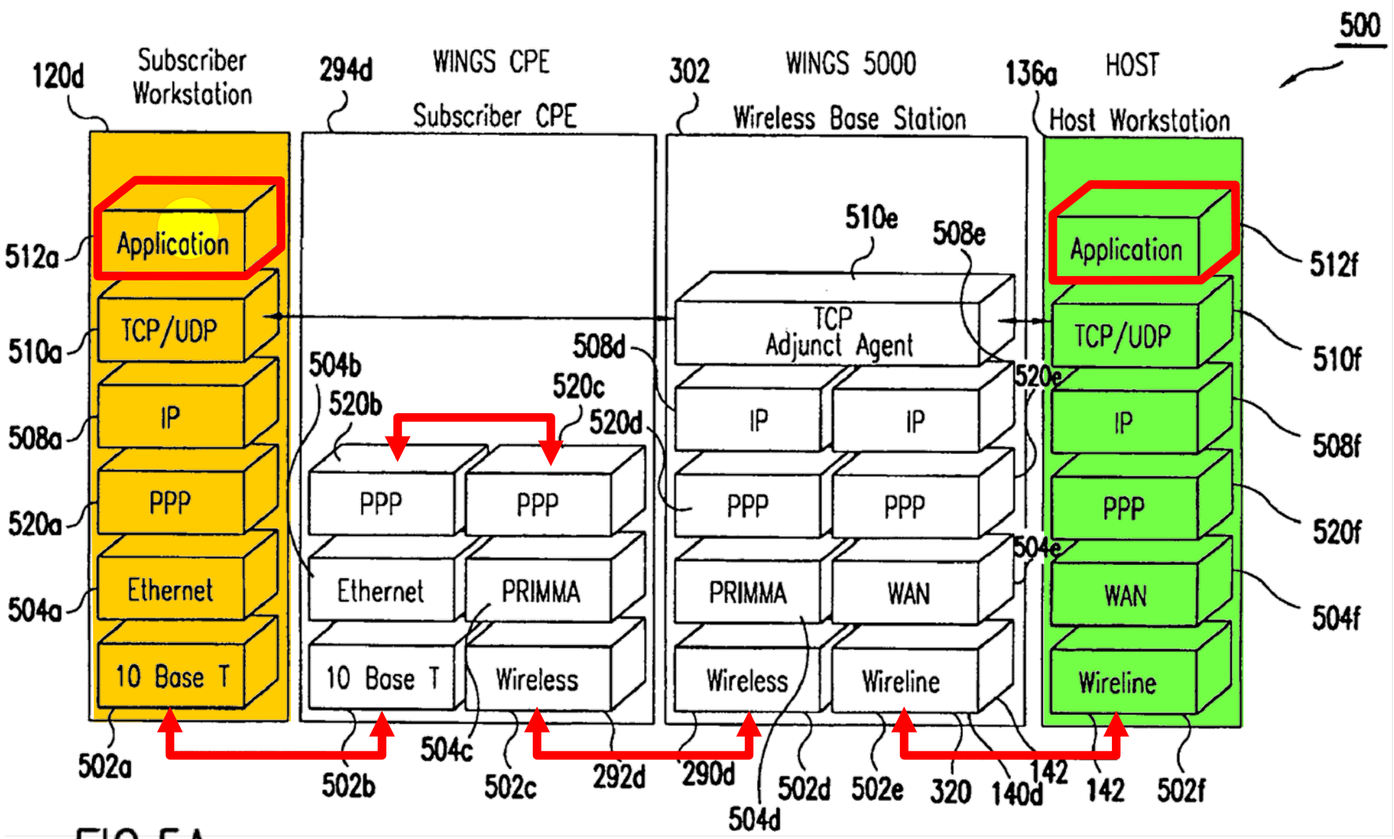
Subscriber CPE **294***d* flows packets coming in from NIC **502***b*, back up its protocol stack through Ethernet layer **504***b*, through PPP layers **520***b* and **520***c*, back down through PRIMMA MAC **504***c* to wireless physical layer **502***c* including antenna **292***d*, then over the wireless medium to antenna **290***d* of wireless base station **302**.

Wireless base station **302** flows packet IP flows up from antenna **290***d* at physical layer **502***d* through PRIMMA MAC layer **504***d*, through PPP layer **520***a*, through IP layer **508***d* to TCP adjunct agent **510***e*, which can flow IP flows down through IP layer **508***e*, through PPP layer **520***e*, through wide area network (WAN) layer **504***e*, through wireline physical layer **502***e*, through interface **320**, over routers **140***d*, through data network **142**, via wireline connections to wireline layer **502***f* of WAN host workstation **136***a*.

Host workstation **136***a* flows IP flows from wireline layer **502***f*, up through its protocol stack through WAN layer **504***f*, through PPP layer **520***f*, through IP layer **508***f*, to TCP/UDP layer **510***f* and on to application layer **512***f*.

'971 Patent at 75:66-76:25

- Both "host workstations" and "subscriber workstations" at each end of the network have **application layers 512**, which are described as the source or destination of IP flows to each other



'971 Patent at Fig. 5A. *See* also Fig. 17 (showing IP flow in a downlink direction) & Fig. 18 (showing IP flow in a uplink direction)

A "host workstation" Runs Applications that Serve as the Source or Destination of IP Flows to a Subscriber End-Point

- A construction that a "host workstation" is incapable of serving as the source or destination of an IP flow to a subscriber end-point would read out the preferred embodiment.

> "A claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.'"

On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmbH, 386 F.3d 1133, 1138 (Fed. Cir. 2004) (citation omitted).

’971 Means-Plus-Function Terms

The ’971 Patent: Claims 12 & 18

The Advanced Reservation Algorithm

FIG. **14** is an exemplary two-dimensional block diagram **1400** of the advanced reservation algorithm. FIG. **14** includes MAC subframe scheduler **1566**, **1666**, frames current frame, n **1402**, and future frames, n+1 **1404**, n+2 **1406**, n+3 **1408**, n+4 **1410**, n+5 **1412**, n+6 **1414** . . . n+x **1416**, representing frames of data packets to be transmitted at times n, n+1, n+2 . . . n+x. Each frame is divided into a

'971 Patent at 61:40-46

Current Frame

Future Frames

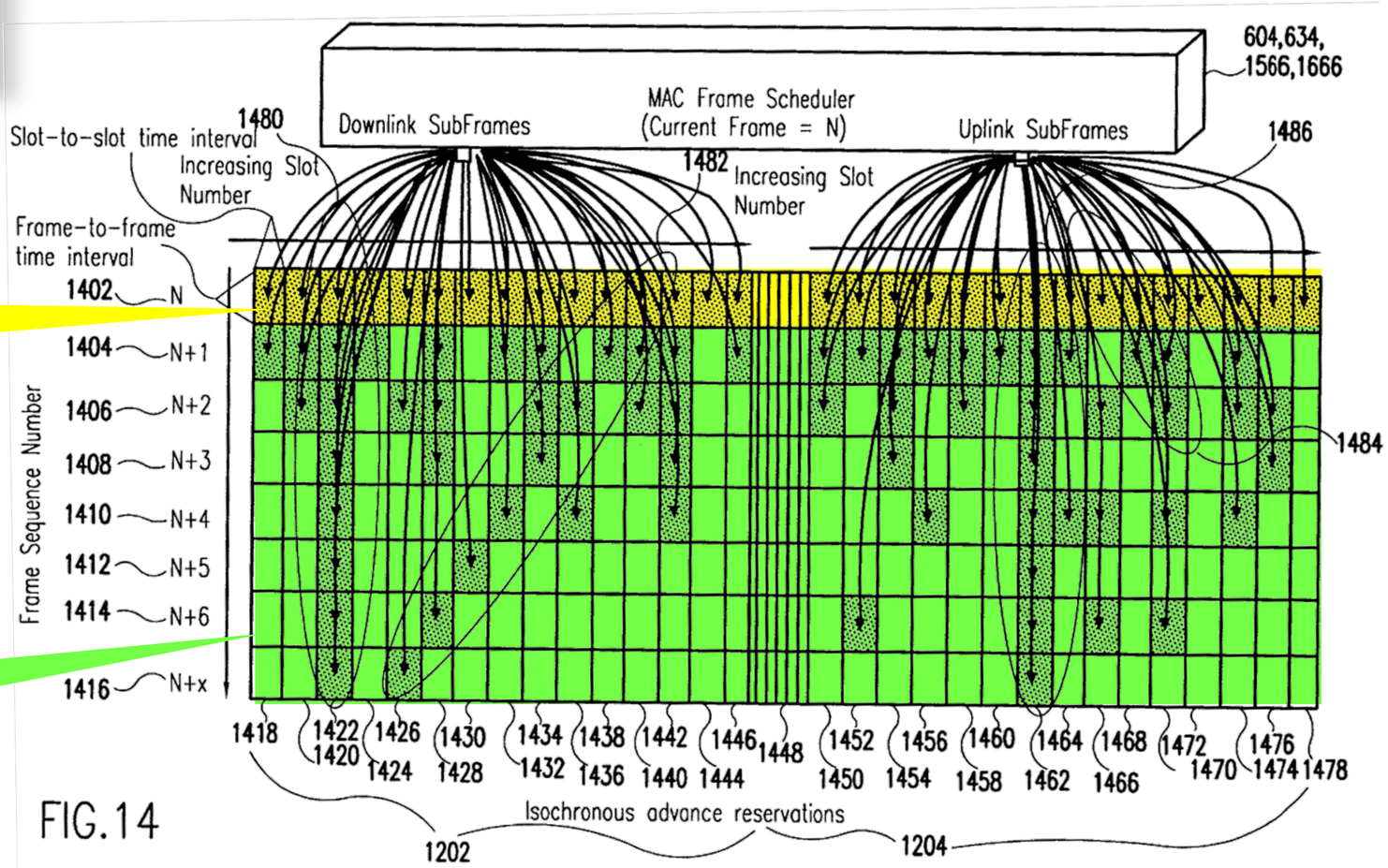


FIG.14

The Advanced Reservation Algorithm

respect to FIGS. 8A and 8B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical reservation **1480** shows a jitter sensitive signal receiving the same slot for downlink communications in each frame. Specifically, the signal is assigned slot **1422** in. frames **1402-1416**. If the frame-to-frame interval is 0.5 ms, then a

’971 Patent at 62:2–11

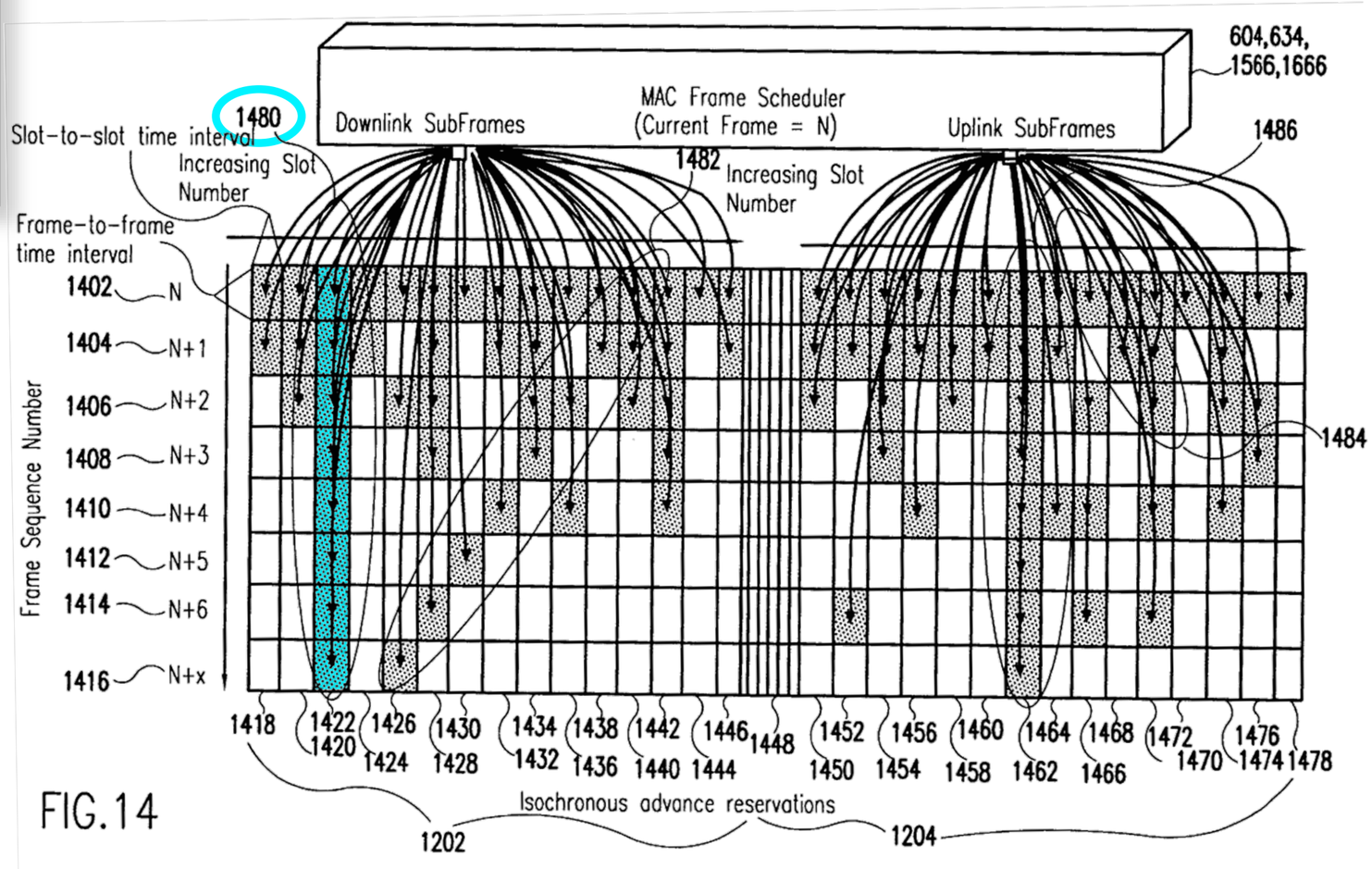


FIG.14

Parties' Proposed Constructions

"means for reserving a first slot for a first data packet of an Internet Protocol (IP) flow in a future transmission frame based on said algorithm" ('971 Patent, Claim 12)

Defendants' Proposed Structure	IV's Proposed Structure
MAC downlink subframe scheduler 1566 or MAC uplink subframe scheduler 1666 implementing an algorithm for assigning a first future slot **that is at least one frame in the future from the current frame** based on the determination by the reservation algorithm of the latency- and jitter-sensitivity of the flows, as described at '971 Patent 62:7-17, 62:46-54, 67:36-47, 73:27-37, Fig. 14	MAC subframe schedulers 1566 or 1666 configured to reserve slots **in a future transmission frame** in accordance with one or more of the patterns shown in Figure 14, by reserving a slot **one or more frames in the future**, **or** as described at '971 Patent 23:14-35, 61:35-62:56, 63:47-57, 66:7-15, 67:36-50, 71:63-72:04, 72:53-66, 73:27-40, Figs. 14, 15A, 15B, 16A, and 16B

Dispute(s):

- Does a "future frame" need to be subsequent in time relative to the current frame?

IV Incorrectly Argues "current frame" Shouldn't Be a Part of the Structure

- IV argues to erase the distinction between a current frame and a future frame:

> Defendants unnecessarily add the concept of a "current frame." This would potentially shift the meaning of the claim term. If the reservation is made after the transmission of the current frame but before the transmission of the next frame, it would be "reserved" as required, but there would be no "current frame." Defendants' construction will cause confusion.

IV Reply Br. at 9

The Advanced Reservation Algorithm

FIG. **14** is an exemplary two-dimensional block diagram **1400** of the advanced reservation algorithm. FIG. **14** includes MAC subframe scheduler **1566**, **1666**, frames current frame, n **1402**, and future frames, n+1 **1404**, n+2 **1406**, n+3 **1408**, n+4 **1410**, n+5 **1412**, n+6 **1414** . . . n+x **1416**, representing frames of data packets to be transmitted at times n, n+1, n+2 . . . n+x. Each frame is divided into a

'971 Patent at 61:40-46

- Future frames occur later in time than the current frame

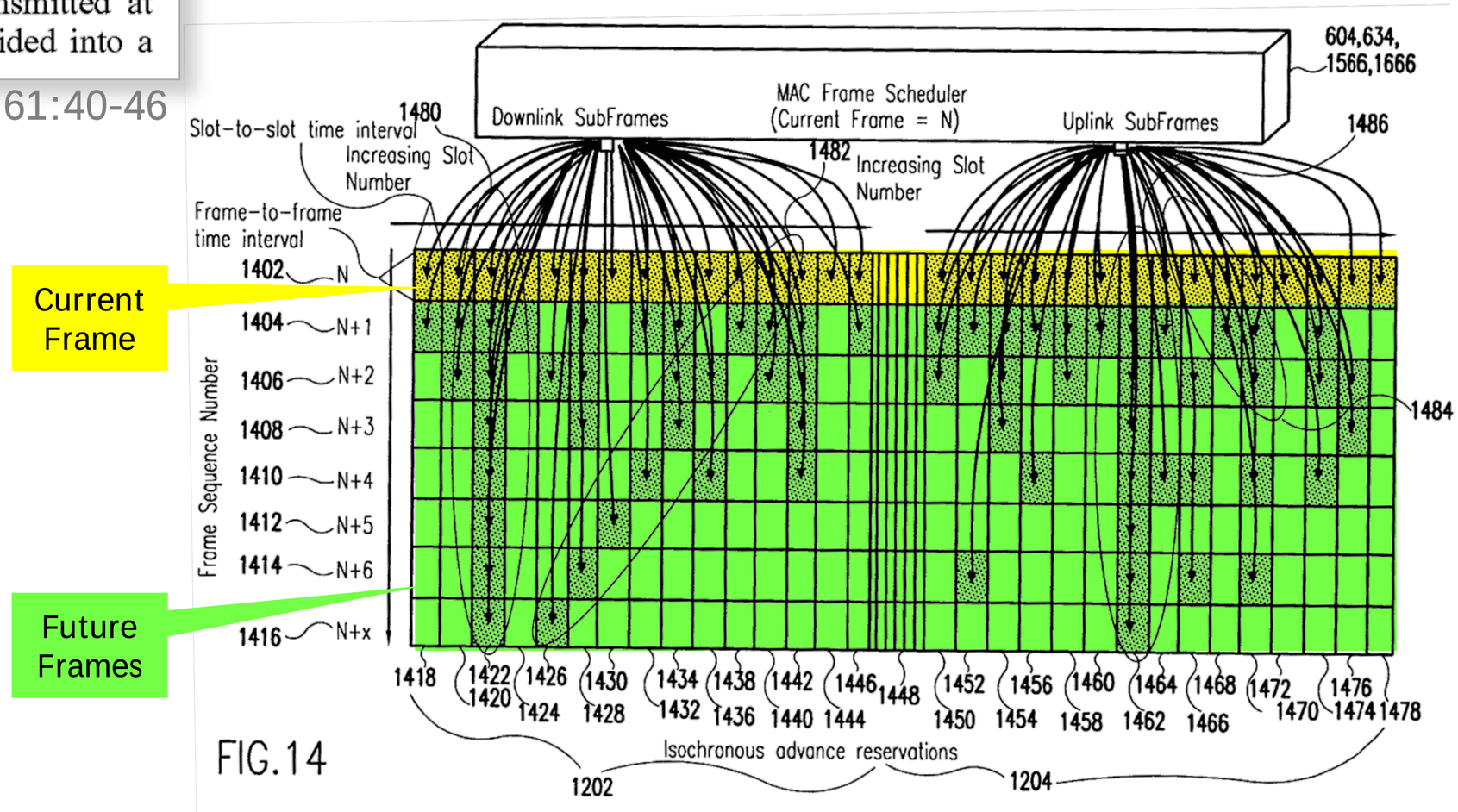


FIG.14

The Advanced Reservation Algorithm

FIG. **14** is an exemplary two-dimensional block diagram **1400** of the advanced reservation algorithm. FIG. **14** includes MAC subframe scheduler **1566**, **1666**, frames current frame, n **1402**, and future frames, n+1 **1404**, n+2 **1406**, n+3 **1408**, n+4 **1410**, n+5 **1412**, n+6 **1414** . . . n+x **1416**, representing frames of data packets to be transmitted at times n, n+1, n+2 . . . n+x. Each frame is divided into a

'971 Patent at 61:40-46

- The current frame is the next frame to be transmitted
- "Future" frames are measured relative to the current fame (**N**+1, **N**+2)

Current Frame

N+1 Future frame

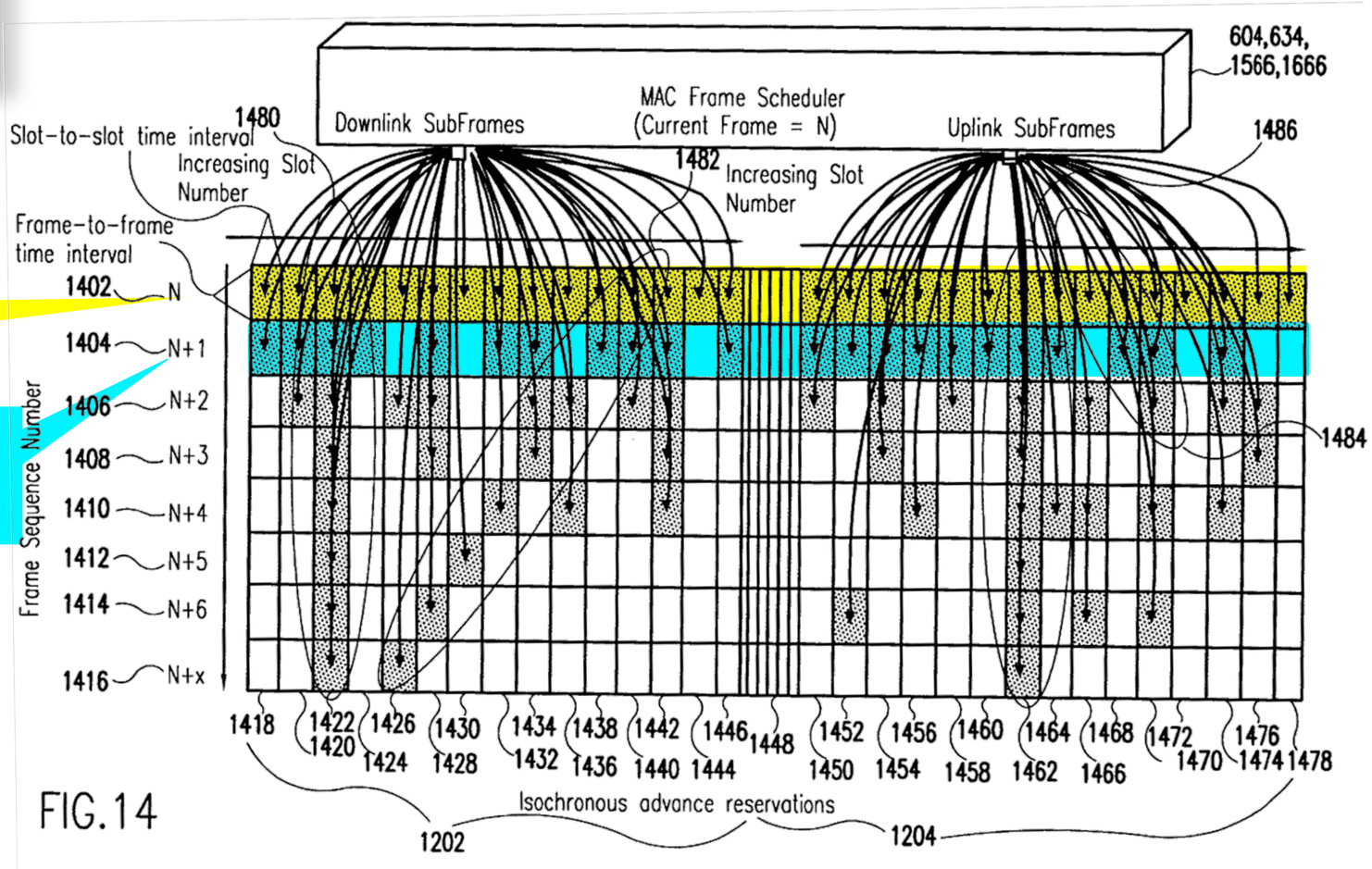


FIG.14

Defendants' Corresponding Structure

- The corresponding structure for "means for reserving" the slots in "future frames" is understood with respect to a reference point, and that is the "current frame."
- IV's reply brief argument illustrates that its construction contradicts the specification.

Parties' Proposed Constructions

"means for reserving a second slot for a second data packet of said IP flow in a transmission frame subsequent in time to said future transmission frame based on said algorithm" ('971 Patent, Claim 12)

Defendants' Proposed Structure	IV's Proposed Structure
MAC downlink subframe scheduler 1566 or MAC uplink subframe scheduler 1666 implementing an algorithm for assigning a second future slot that is **at least two frames in the future from the current frame** based on the determination by the reservation algorithm of the latency- and jitter-sensitivity of the flows, as described at '971 Patent 62:7-17, 62:46-54, 67:36-47, 73:27-37, Fig. 14	MAC subframe schedulers 1566 or 1666 configured to reserve slots in a **second future transmission frame** in accordance with one or more of the patterns shown in Figure 14, by reserving a slot **two** or more **frames in the future**, **or** as described at '971 Patent 23:14-35, 61:35-62:56, 63:47-57, 66:7-15, 67:36-50, 71:63-72:04, 72:53-66, 73:27-40, Figs. 14, 15A, 15B, 16A, and 16B

Dispute(s):

- Does the "transmission frame subsequent in time to said future transmission frame" need to be at least two frames in the future relative to the current frame? (Defendants' position)

The Advanced Reservation Algorithm

FIG. **14** is an exemplary two-dimensional block diagram **1400** of the advanced reservation algorithm. FIG. **14** includes MAC subframe scheduler **1566**, **1666**, frames current frame, n **1402**, and future frames, n+1 **1404**, n+2 **1406**, n+3 **1408**, n+4 **1410**, n+5 **1412**, n+6 **1414** . . . n+x **1416**, representing frames of data packets to be transmitted at times n, n+1, n+2 . . . n+x. Each frame is divided into a

'971 Patent at 61:40-46

"means for reserving a second slot . . . in a transmission frame subsequent in time to said future transmission frame"

- The current frame is the next frame to be transmitted
- The first transmission frame that is subsequent in time to said future transmission frame (N+1) is at least two frames later than the current frame (N)

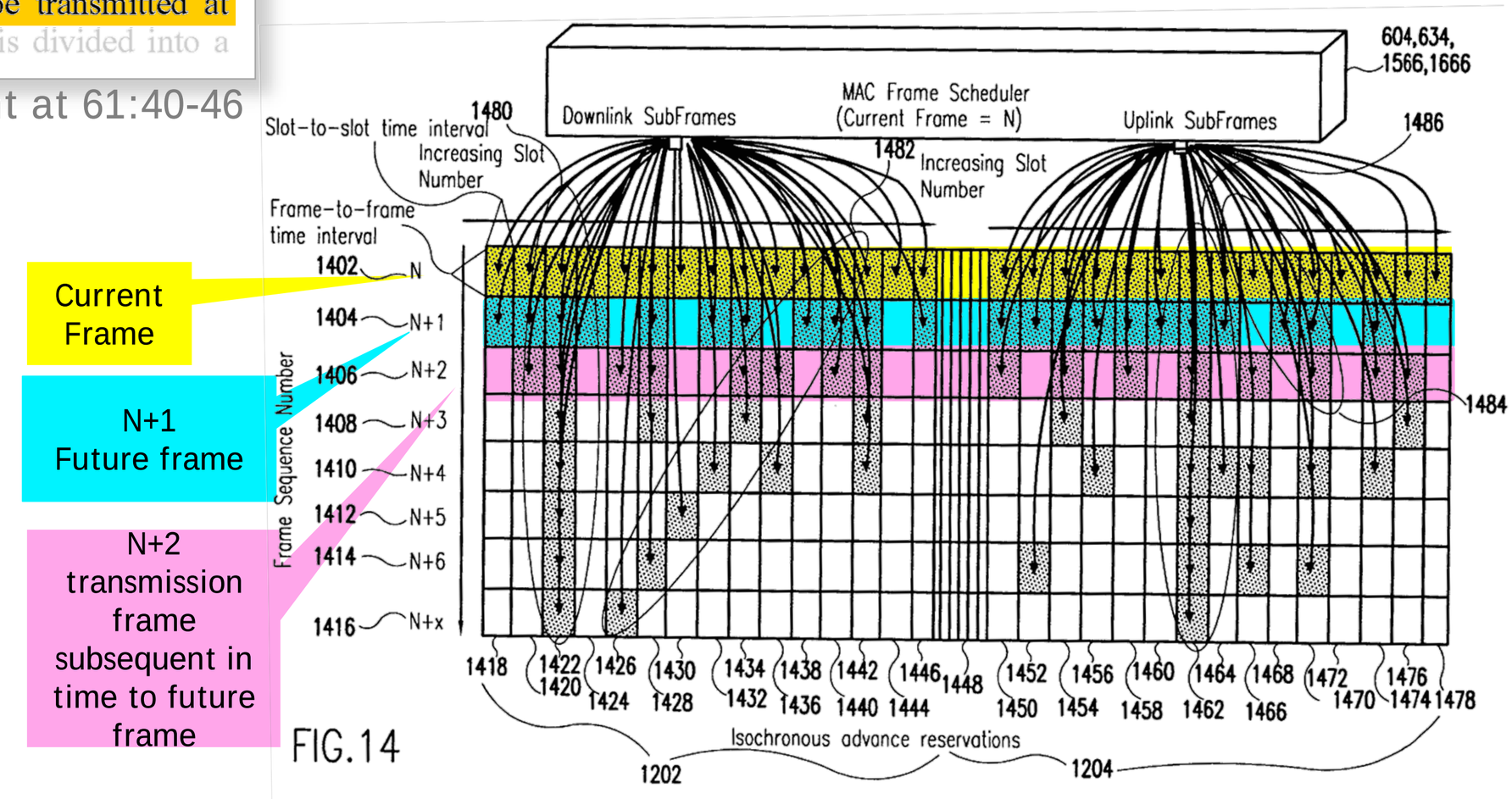


FIG.14

Defendants' Corresponding Structure

- The corresponding structure for "means for reserving" the slots in "future frames" is understood with respect to a reference point, and that is the "current frame."
- IV's reply brief argument illustrates that its construction contradicts the specification.

Parties' Proposed Constructions

"assigning means for assigning future slots of a transmission frame to a portion of said IP flow in said transmission frame for transmission over said shared wireless network" ('971 Patent, Claim 12)

Defendants' Proposed Structure	IV's Proposed Structure
MAC downlink subframe scheduler 1566 or MAC uplink subframe scheduler 1666, implementing an algorithm that assigns future slots to a portion of an IP flow based on the priority of the IP flow, as described at '971 Patent 61:65-62:11	MAC subframe schedulers 1566 or 1666

Dispute(s):

- Whether the term is appropriately limited to the disclosed algorithm as required by *WMS Gaming*

WMS Gaming Requires an Algorithm for the Corresponding Structure

- IV ignores that "subframe schedulers 1566 or 1666" are described in the specification as generic "processor module[s]" and require an algorithm under *WMS Gaming.*

> "In a means-plus function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosure structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm."

WMS Gaming, Inc. v. Int'l Game Tech., 184 F.3d 1339, 1349 (Fed. Cir. 1999).

- IV makes no attempt to identify any algorithm beyond the language of the claim itself.

Defendants' Proposed Structure Is Taken Directly from the Specification

In the present invention, an advanced reservation algorithm assigns future slots to data packets based on the priority of the IP data flow with which the packet is associated. Exemplary priorities are described above with respect to FIGS. **8**A and **8**B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical reservation **1480** shows a jitter sensitive signal receiving the same slot for downlink communications in each frame. Specifically, the signal is assigned slot **1422** in. frames **1402-1416**. If the frame-to-frame interval is 0.5 ms, then a

'971 Patent at 61:65-62:11

Parties' Proposed Constructions

"means for applying an advanced reservation algorithm" ('971 Patent, Claim 12)

Defendants' Proposed Structure	IV's Proposed Structure
MAC downlink subframe scheduler 1566 or MAC uplink subframe scheduler 1666 implementing an algorithm that determines the latency and jitter sensitivity of flows and then determines how to assign slots based on that determination (e.g., periodically or not, with what period), as described at '971 Patent 51:11-23, 61:6-16, 61:65-62:7, 62:32-37, Fig. 14	MAC subframe schedulers 1566 or 1666 configured to assign future slots to data packets based on the priority of the IP data flow with which the packet is associated, as described at '971 Patent 23:14-35, 61:35-62:56, 63:47-57, 66:7-15, 67:36-50, 71:63-72:04, 72:53-66, 73:27-40, Figs. 14, 15A, 15B, 16A, and 16B

Dispute(s):

- Whether the means for applying the advanced reservation algorithm is limited to structures performing that algorithm (Defendants) or instead covers structure implementing any future slot scheduling algorithm (IV)

IV's recited structure is over-broad

- One embodiment relates to assigning future slots for any type of traffic

- Another embodiment is the Advanced Reservation Algorithm, which handles isochronous (jitter and latency sensitive) traffic

MAC downlink subframe scheduler **1566** is a processor module that takes the packets queued in class queues **1564***a*-**1564***f*, and can make frame slot reservations to fill up subframes **1568***a*-**1568***k* based on priorities **1570**, **1572** and **1574**, which is a variable number of frames. In one embodiment, each subframe is scheduled (filled) with up to a predetermined number of packets from each of the classes **1564***a*-**1564***f* according to priorities **1570**, **1572** and **1574**. In another embodiment, the subframes are scheduled according to the inventive advanced reservation algorithm method described with respect to FIGS. **13** and **14** for isochronous reservations. In yet another embodiment, the subframes are scheduled according to a combination of known methods and the advanced reservation algorithm method of the present invention.

'971 Patent at 67:36–50
(*Id*. at 73:27-40 similar)

IV's recited structure is over-broad

- 62:46-54 describes the advanced reservation algorithm
- IV improperly includes lines 55-56 and Figures 15A, 15B, 16A, and 16B – which do not describe the advanced reservation algorithm, but instead describe flow prioritization

Using these principles, the advanced reservation algorithm can assign the slots from highest priority to lowest priority, exhausting the number of available slots in future frames. IP data flows that are both jitter and latency sensitive can be assigned slots with periodic patterns first (e.g., patterns **1480**, **1482**, **1484** and **1486**), followed by flows that are highly latency sensitive (but not jitter sensitive), et cetera, until the flows of lowest latency sensitivity are assigned to slots. Prioritization of different classes of IP flows by scheduler **604**, **634**, **1566**, **1666** is described further below with reference to FIGS. **15**A, **15**B, **16**A and **16**B.

'971 Patent at 62:46-55

The Advanced Reservation Algorithm Handles Jitter and Latency Sensitive Traffic

- The specification only describes the advanced reservation algorithm as assigning slots to latency and jitter sensitive traffic

In the present invention, an advanced reservation algorithm assigns future slots to data packets based on the priority of the IP data flow with which the packet is associated. Exemplary priorities are described above with respect to FIGS. **8**A and **8**B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical

'971 Patent at 61:65-62:7

For latency sensitivity, one or more slots can be guaranteed in each frame. For example, for a call that is latency sensitive, but not jitter sensitive, each frame can be assigned one (or more) slots for communications. However, the slot(s) need not be periodic between frames, as with jitter sensitive calls. The greater the number of slots allocated per frame to an IP flow, the greater total bandwidth per frame rate for the IP flow.

'971 Patent at 62:32-39, *see also* 62:30-45

IV's "Ellipse" argument is meritless

- Figures 8A and 8B do not address assigning packets to slots in a frame.
- Instead, they deal with a process placing packets into priority class queues, a separate process from the advanced reservation algorithm's operation.

In the present invention, an advanced reservation algorithm assigns future slots to data packets based on the priority of the IP data flow with which the packet is associated. Exemplary priorities are described above with respect to FIGS. **8**A and **8**B. For calls that are sensitive to jitter, meaning calls that are time sensitive, it is important to maintain an isochronous (i.e., in phase with respect to time) connection. With such signals, it is important that the data be dispersed in the same slot between frames, or in slots having a periodic variation between frames. For example, vertical

'971 Patent at 61:65-62:7

Block diagram **800** lists an exemplary set of priorities **812** used by downlink flow scheduler **604** to place received data packets into priority class queues. Listed are the following set of example priorities: latency-sensitive UDP priority **812***a*, high priority **812***b*, intermediate priority **812***c*, initial hypertext transfer protocol (HTTP) screens priority **812***d*, latency-neutral priority **812***e*, file transfer protocol (FTP), simple mail transfer protocol (SMTP) and other e-mail traffic priority **812***f* and low priority **812***g*. Persons skilled in

'971 Patent at 51:56-52:20

Parties' Proposed Constructions

"means for taking into account service level agreement (SLA) based priorities for said IP flow" ('971 Patent, Claim 18)

Defendants' Proposed Structure	IV's Proposed Structure
downlink scheduler 604/1566 or uplink scheduler 634/1666 implementing an algorithm that increases or decreases queuing priority of an IP flow based on the service level agreement of the user associated with the IP flow, as described at '971 Patent 53:49-57, 53:34-36, 66:57-63	Downlink scheduler 604/1566 or uplink scheduler 634/1666 configured to use information from SLA priority data table 1570 to affect the queueing function and provide different service levels to users

Dispute(s):

- Whether the term is appropriately limited to the disclosed algorithm as required by *WMS Gaming*

Defendants' Proposed Structure Identifies the Only Algorithm Described

- Defendants' structure identifies the only algorithm described for taking into account SLA-based priorities:

> SLA priority data table **1570** can use predetermined service level agreements for particular customers to affect the queuing function. A customer can be provided a higher quality of telecommunications service by, for example, paying additional money to receive such premium service. An algorithm running on module **1562** can increase the queuing priority for messages transmitted to such customers.

'971 Patent at 66:56-63

IV's Structure and Citations Merely Reiterate the Claimed Function

- The portions of the specification that IV cites simply reiterate the claimed function, without specifying any algorithm of how the function is performed:

> 904*a*, 906*a* and 908*a*, respectively. PRIMMA MAC scheduler **604**, **634** of wireless base station **302** can take into account SLA-based priorities in allocating available bandwidth to the subscriber CPE IP flows **902***b*, **904***b*, **906***b* and **908***b*. In the example illustration, IP flow **902***b* can be allocated frame slot **902***c* based on SLA priority **902***a*. Frame slots **904***c*, **906***c* and **908***c* can be similarly scheduled taking into account SLA priorities. Uplinked IP flow traffic can then be transmitted on to data network **142**.

'971 Patent at 53:49-57

"Labeling the devices as 'electronic' and repeating their function does not identify structure."

Robert Bosch, LLC v. Snap-On Inc., 769 F.3d 1094, 1101 (Fed. Cir. 2014)

“the analyzed contents” / “the analyzed packet contents”

The ’517 Patent: Claims 1 and 12

Parties' Proposed Constructions

"the analyzed contents" / "the analyzed packet contents" (Claims 1 & 12)

Defendants' Construction	IV's Construction
"analyzed contents of the packets to be communicated over the shared wireless bandwidth in the downlink direction"	Plain meaning, the portion of the packets previously analyzed.

Dispute(s):

- Whether antecedent basis mandates the term has the same meaning throughout the claim.

The Parties Agree That Antecedent Basis Applies to "Analyzed Contents"

- IV concedes that the term finds antecedent basis in the "analyzing" step

1. A method for allocating a shared wireless bandwidth in a packet-centric wireless point to multi-point telecommunications system, the method comprising:

analyzing contents of packets to be communicated over the shared wireless bandwidth in a downlink direction from a wireless base station to at least one customer premises equipment (CPE) station;

. . .

allocating the shared wireless bandwidth between the wireless base station transmitting in the downlink direction and the at least one CPE station transmitting in the uplink direction based on the analyzed contents and the analyzed reservation requests, wherein allocating the shared bandwidth comprises:

'517 Patent at Claim 1

IV's Criticisms of Defendants' Construction are Misplaced.

- After taking the unsupportable position that the term "content" should be replaced with "portion," IV's Reply Brief backpedals and now expresses "no preference for portion."

  - IV Reply Br. at n.3

- IV also inexplicably argues that including the full antecedent basis for the term as recited in the analyzing step somehow amounts to an "attempt to limit the claim terms."

  - Id. at 10

- To the contrary, Defendants' construction merely confirms that the same meaning for "contents" applies throughout the claim.

- **Accordingly, Defendants' construction should be adopted**

The Allocation Terms

The ’517 Patent: Claims 1 and 12

Parties' Proposed Constructions

"allocating the shared wireless bandwidth between the wireless base station transmitting in the downlink direction and the at least one CPE station transmitting in the uplink direction" ('517 Patent, Claim 1)

Defendants' Construction	IV's Construction
"allocating the shared wireless bandwidth between (1) the wireless base station transmitting in the downlink direction and (2) the at least one CPE station transmitting in the uplink direction"	Plain meaning, no construction necessary.

Dispute(s):

- Whether the claims' plain wordings require an allocation decision to be made *between* uplink and downlink transmissions (Defendants), or could more broadly be interpreted to be any allocation to a UE or base station (IV)

Parties' Proposed Constructions

"allocate wireless bandwidth between the uplink direction and the downlink direction responsive to the analyzed packet contents and the analyzed reservation requests" ('517 Patent, Claim 12)

Defendants' Construction	IV's Construction
"allocate wireless bandwidth between (1) the uplink direction and (2) the downlink direction responsive to the analyzed packet contents and the analyzed reservation requests"	Plain meaning, no construction necessary.

Dispute(s):

- Whether the claims' plain wordings require an allocation decision to be made *between* uplink and downlink transmissions (Defendants), or could more broadly be interpreted to be any allocation to a UE or base station (IV)

Claim 12 Plainly Requires an Allocation Choice between Uplink and Downlink

- Defendants' proposed notations merely clarify that the allocation is made between the **(1)** uplink direction and **(2)** downlink direction

12. A wireless base station comprising:

. . .

the reservation requests, and wherein the controller is configured to allocate wireless bandwidth between the uplink direction and the downlink direction responsive to the analyzed packet contents and the analyzed reservation requests, and wherein the controller is configured

'517 Patent at Claim 12

Claim 1 Is Consistent In Meaning With Claim 12

- Claim 1 consistently requires the allocation to be made between: **(1)** the BS transmitting in the downlink, and **(2)** the CPE transmitting in the uplink:

> 1. A method for allocating a shared wireless bandwidth in a packet-centric wireless point to multi-point telecommunications system, the method comprising:
>
> . . .
>
> allocating the shared wireless bandwidth between the wireless base station transmitting in the downlink direction and the at least one CPE station transmitting in the uplink direction based on the analyzed contents and the analyzed reservation requests, wherein allocating the

'517 Patent at Claim 1

The Specification is Consistent with the Claims' Plain Meaning

- Figure 13 illustrates a shared wireless bandwidth being allocated between uplink and downlink portions.

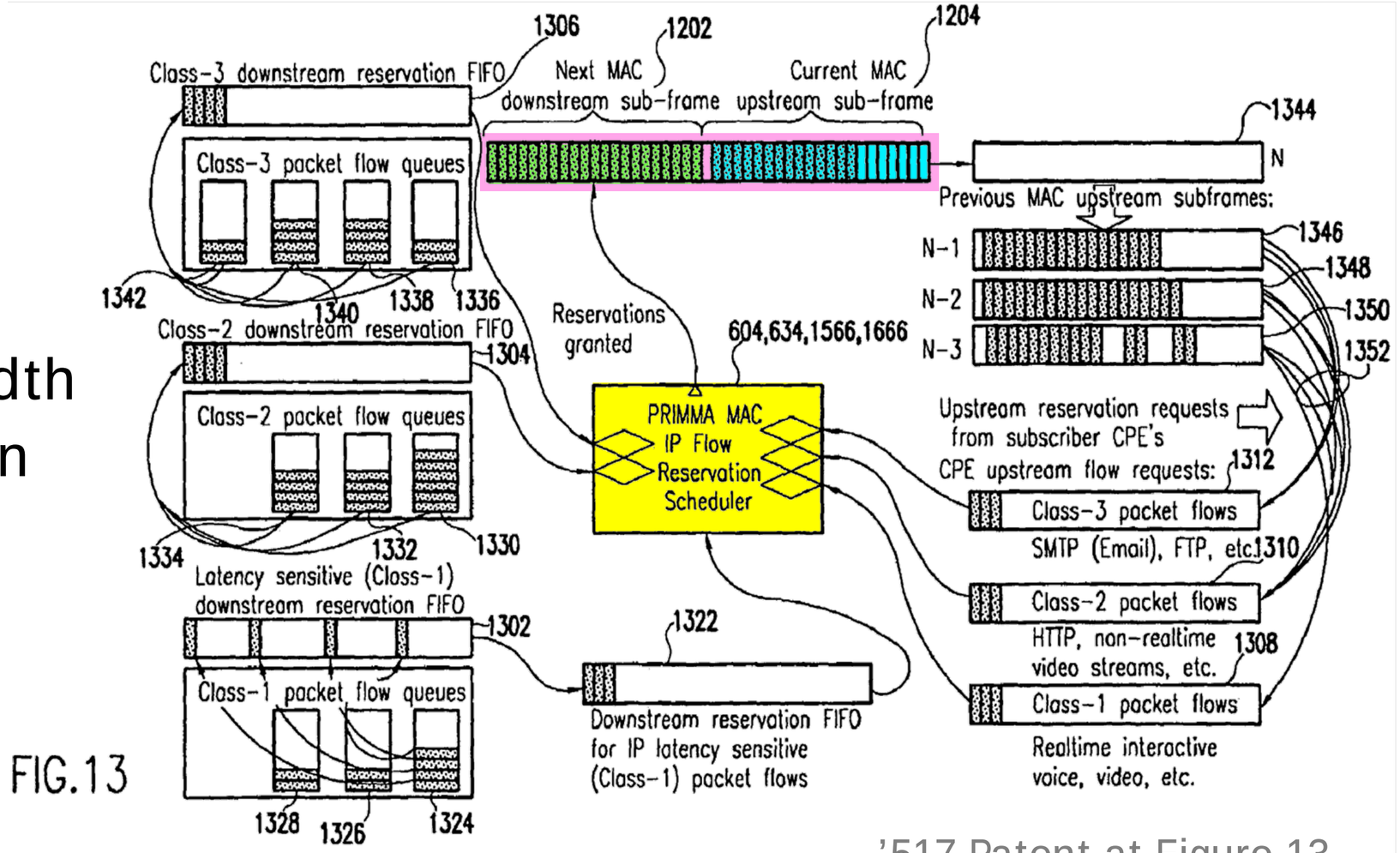


FIG.13

'517 Patent at Figure 13

The Specification is Consistent with the Claims' Plain Meaning

- The patent discloses allocating slots (i.e., bandwidth) *between* uplink and downlink:

In the embodiment described herein, the type of TDMA used is TDMA/time division duplex (TDMA/TDD). In TDMA/TDD, for one interval of time, transmission is from a CPE station **294** to a wireless base station **302**, and in another instance of time, it is from a wireless base station **302** to a CPE station **194**. Any number of slots can be used for the uplink or for the downlink. The number of slots is dynamically assigned for both the uplink and the downlink. However, because the downlink data rate is usually higher than the uplink data rate, more slots are assigned to the downlink. Although distribution of slots between the downlink and uplink is dynamically assigned, the total number of slots for a frame is fixed in this embodiment.

'517 Patent at 53:17-29

The Specification Is Consistent with the Claims' Plain Meaning

- The patent discloses allocating slots (i.e., bandwidth) *between* uplink and downlink:

In the present embodiment the sum of all TDMA slots **1222** within a frame of frame size **1228** is fixed. However, as noted, using the resource allocation methodologies of the present invention it is possible to dynamically allocate a subset of the entire number of TDMA slots **1222** to an uplink direction, where all the uplink TDMA slots are known collectively as an uplink subframe or an upstream transmission subframe **1204**, and to dynamically allocate a subset of the entire number of TDMA slots **1222** to a downlink direction, where all the downlink TDMA slots are known collectively as a downlink subframe or an downlink transmission subframe **1202**. Using the resource allocation method of the present invention, it is possible to allocate all TDMA slots **1222** to a given upstream or downstream direction. It is further possible to allocate all data slots **1224** to a single CPE station. The wireless base

'517 Patent at 54:4-18

IV's Reply Confirms IV's Departure from Plain Meaning

- IV improperly proposes these terms merely refer to allocating between a "wireless base station" and "at least one CPE station."

transmission and (2) uplink transmission"). The assumption is false because the claims further require that the allocating is performed "between" a "wireless base station" and "at least one CPE station." *See* '517 patent, 81:42-47, cl. 1 ("allocating the shared wireless bandwidth between the wireless base station transmitting in the downlink direction and the at least one CPE station transmitting in the uplink direction"). Reading the claims as a whole, "allocating … between" broadly encompasses allocating some bandwidth to a wireless base station, some to a first CPE station, some to a second CPE, and so on. *Id.* Defendants' arguments improperly

IV's Reply Br. (Dkt. No. 126), at 12

Construction is Required Because IV Has Rejected the Claim's Plain Meaning

- IV's apparent interpretation of Claim 1 would render the "transmitting" clauses superfluous.

1. A method for allocating a shared wireless bandwidth in a packet-centric wireless point to multi-point telecommunications system, the method comprising:

. . .

allocating the shared wireless bandwidth between the wireless base station ~~transmitting in the downlink direction~~ and the at least one CPE station ~~transmitting in the uplink direction~~ based on the analyzed contents and the analyzed reservation requests, wherein allocating the

'517 Patent at Claim 1

Construction is Required Because IV Has Rejected the Claim's Plain Meaning

- IV's apparent interpretation would require re-writing Claim 12 to replace "uplink direction and downlink direction" with "base station and CPE station."

12. A wireless base station comprising:

. . .

the reservation requests, and wherein the controller is configured to allocate wireless bandwidth between the ~~uplink direction and the downlink direction~~ responsive to the analyzed packet contents and the analyzed reservation requests, and wherein the controller is configured

Base station and CPE station

'517 Patent at Claim 12

IV's Criticisms of Defendants' Construction Are Meritless

- IV asserts Defendants' construction seeks to limit the claim to a particular embodiment requiring "dynamic" allocation and "variable length subframes."
  - IV's criticism is meritless; Defendants are not seeking to "limit" the claims to particular embodiments, only a construction that recognizes the claims' plain and ordinary meaning.
  - Not seeking to limit claim to "dynamic" allocations or to "subframes."
- IV argues that Defendants' wrongfully ignore the claims' recitation of a base station and UE; this is false. To the contrary it is IV's interpretation that ignores the plain language of the claim

“said plurality of packets”

The ’206 Patent: Claim 109

Parties' Proposed Constructions

"said plurality of packets" ('206 Patent, Claim 109)

Defendants' Construction	IV's Construction
"the plurality of packets" that are scheduled for communication over a shared wireless bandwidth are the same plurality of packets that are classified *Or, alternatively:* "the same plurality of packets that are classified"	Plain meaning, said two or more packets.

Dispute(s):

- Whether antecedent basis mandates the term has the same meaning throughout the claim

The Same Packets that are Classified are Referred to Throughout the Claim

109. A method for scheduling packets comprising:

classifying a plurality of packets according to end-user quality of service (QoS) requirements of said plurality of packets; and

scheduling said plurality of packets for communication in at least one of an upstream direction and a downstream direction over a shared wireless bandwidth according to a scheduling algorithm.

’206 Patent at Claim 109

The Specification Is Consistent With Defendants' Construction

- The same data packets placed in queues by class are scheduled for transmission.

In the downlink path, an IP flow QoS class queuing processor (described below with respect to FIGS. **15**A and **15**B) queues the received data packets into class 1 packet flow queues **1324**, **1326** and **1328**, class 2 packet flow queues **1330**, **1332**, **1334**, and class 3 packet flow queues **1336**, **1338**, **1340** and **1342**.

. . .

downstream queue **1306**. Flow scheduler **604**, **634** schedules these downlink data packets onto the downlink transmission subframe **1202**.

'206 Patent at 58:28-43

IV's Briefing Does Not Dispute that Antecedent Basis Applies

- Instead, IV attempts to sidestep the antecedent basis issue by merely proposing "plurality of" means "two or more" (which is undisputed and beside the point).
- Accordingly, the Court should construe the term consistent with the claim and confirm that the same plurality of packets are referred to throughout.

> **IX. "said plurality of packets"—'206 claim 109**
>
> "Said two or more packets" is the exact meaning of "said plurality of packets." IV's construction explicitly includes the word "said," and Defendants' criticisms on that point are misplaced. *See* D.I. 110 (Amended 4-3 Statement) at 14.

IV's Reply Br. (Dkt. No. 126), at 12

Koninklijke KPN N.V. v. Samsung Electronics Co. (E.D. Tex. 2016)

Same dispute:

> "The parties have disputed whether 'data packets' must be the same data packets throughout each claim"

Koninklijke KPN N.V. v. Samsung Elecs., Co., 2:14-cv-1165-JRG, 2016 WL 2610649, at *5 (E.D. Tex. May 6, 2016) (Gilstrap, J.)

Claim at issue:

19. A communication system comprising:

. . .

the user station is arranged for issuing *data packets* according to a first protocol and the at least one services station is arranged for receiving the *data packets* according to the first protocol, and

. . .

a first network arranged for transmitting *data* according to a second protocol, a first device for receiving the *data packets* issued by the user station and for supplying said *data packets* to the first network,

. . . .

Id.

Koninklijke KPN N.V. v. Samsung Electronics Co. (E.D. Tex. 2016)

- The Court's Construction affirmed the data packets are the same throughout the claim:

Term	Construction
"the data packets," "the . . . data packets," and **"said data packets"** ('250 Patent, Claims 19, 20)	**"the data packets issued by the user station according to the first protocol"**
"the data packets" and **"these data packets"** ('250 Patent, Claim 21)	**"the data packets issued by the services station according to the first protocol"**

Koninklijke KPN N.V. v. Samsung Elecs., Co., 2:14-cv-1165-JRG, 2016 WL 2610649, at *7 (E.D. Tex. May 6, 2016) (Gilstrap, J.)